

# Physical Therapy in the Military Health System

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## ABSTRACT

Since the early 1970s, physical therapists have been practicing in the military as direct-access “physician extenders” with enhanced practice privileges, including ordering diagnostic imaging, prescribing medications, placing soldiers on limited duty, and referring to other medical specialists. Over the past 50 years, numerous studies have documented that this practice is safe, effective, cost-efficient, and leads to high levels of patient and provider satisfaction, with no evidence of patient harm. Physical therapists in the military have deployed in support of every combat operation and multiple humanitarian missions since World War I. In addition to direct patient care, military physical therapists also serve as consultants on human performance, injury prevention, and wellness. Due to the demonstrated value of military physical therapists in improving operational readiness, they have recently been integrated into operational units across the military to help enhance physical performance and decrease the impact of training-related injuries. This course section provides an overview of the history of physical therapy in the United States military. It highlights the diverse roles physical therapists play in maintaining the fighting strength of the armed forces. It will also cover pathways for physical therapists to serve within the Military Health System (MHS), along with military-specific and professional development opportunities available in that setting. Additionally, the section will examine the typical scope of practice and professional settings for military physical therapists, illustrated by 4 case examples demonstrating the use of enhanced practice privileges to expedite appropriate medical disposition for patients.

**Key Words:** direct access, scope of practice, human performance

## LEARNING OBJECTIVES

Upon completion of this section, the reader will be able to:

1. Discuss the history and evolution of the role of physical therapists in the United States military.

2. Describe the pathways to becoming a physical therapist in the Military Health System (MHS).
3. Discuss the scope of practice and unique physical therapist practice settings in the MHS.
4. Describe the professional and military educational opportunities available to military physical therapists.
5. Using case examples, discuss how military physical therapists can practice “at the top of their license” to facilitate efficient patient diagnosis, treatment, and disposition.

## INTRODUCTION

Physical therapists have been practicing as direct access “physician extenders” in the military since the early 1970s.<sup>1,2</sup> As a physician extender, physical therapists can order radiographs and other diagnostic tests, refer directly to other practitioners, and prescribe some medications.<sup>3</sup> Military physical therapists have demonstrated impressive diagnostic skills, with accuracy rates comparable to orthopedic surgeons when using magnetic resonance imaging (MRI) to confirm their clinical findings. One study found that physical therapists had a 74.5% match between their clinical exam findings and MRI results, compared to 80.8% for orthopedic surgeons.<sup>4</sup> When physical therapists examined patients via direct access, without a physician referral, their accuracy rose to 90.9% when compared to MRI results. In contrast, non-orthopedic specialists had a much lower accuracy of 35.4%.<sup>4</sup> Importantly, seeing a military physical therapist directly is also safe. Over a 40-month observation period across 18 military medical facilities, 27,762 patients were treated by physical therapists without a physician referral. Not a single consequent adverse event was reported.<sup>5-9</sup>

Military physical therapists are vital members of the healthcare team, with proven expertise in screening, diagnosing, and directly referring patients to specialists when needed. However, their greatest impact lies in effectively treating neuromusculoskeletal injuries and rapidly returning service members to duty, making them an essential asset to military healthcare. Moreover, physical therapists play a vital role in injury prevention, health promotion, and human performance optimization, with ever-increasing roles in managing pelvic health, vestibular dysfunction, concussion, and chronic pain. This course section provides an overview of the role of physical therapists within the Military Health System (MHS) and illustrates how physical therapists practicing at the top of their license can improve health outcomes, lower healthcare costs and usage, and enhance the patient experience.

## Historical Context

The origin of physical therapy in the United States began with the training of women as “reconstruction aides” to provide physical rehabilitation in military hospitals during World War I. In 1921, the first professional organization was formed: the American Women’s Physical Therapeutic Association, which later became the American Physical Therapy Association (APTA). It opened membership to men in 1923.<sup>10</sup>

The first academic programs began around this time, and the field started establishing standards of education and practice. Physical therapists served in every theater of operation in World War II and during the Korean War.<sup>11</sup> Physical therapy proved effective for various conditions, but was most valuable in returning soldiers to duty and improving physical function for patients with orthopedic conditions and peripheral nerve injuries.<sup>10</sup> Early use of physical therapists in the military was typically more prescriptive, but they assumed an increased role as “physician extenders” in Vietnam when orthopedic surgeons could not manage high volumes of non-surgical cases in addition to the overwhelming number of surgical cases they faced.<sup>1-3,12</sup> Due to the high surgical demand for orthopedic surgeons in combat zones, many soldiers with non-surgical conditions had lengthy waits to be evaluated. Physical therapists became a natural choice to manage the non-operative conditions, with various protocols and programs developed and supervised by orthopedic surgeons.<sup>2</sup>

Major Barbara Gray was the first physical therapist to serve in Vietnam, volunteering for duty from her clinic at Fort Belvoir, Virginia. Arriving in March 1966, she served in the 17th Field Hospital in Saigon.<sup>13</sup> In addition to her clinical duties, Maj Gray also served as a consultant to other hospitals throughout the command. Due to her considerable contribution to rehabilitating injured soldiers, particularly those with soft tissue injuries to the extremities, 10 additional physical therapists were assigned to serve in evacuation and field hospitals in Vietnam in the spring of 1967. The senior physical therapist assigned to the combat theater also served as a consultant to the 44th Medical Brigade. In this role, they continuously evaluated facility capabilities and workload demands, assigned incoming officers to appropriate locations, and directed soldiers to hospitals in need of their expertise. The value of physical therapists was so evident to operational commanders that they took active steps to ensure clinics throughout the country were furnished with adequate space and necessary equipment.<sup>13</sup>

Orthopedic surgeons also recognized the value of physical therapists during the Vietnam War, noting that rehabilitation was an important part of a wounded soldier’s recovery. Physical therapists were deemed essential in any decision regarding the rehabilitation of an orthopedic patient. It was noted that these “innovative, interested, intelligent individuals were of immense value to both the patient and physician.”<sup>14(p215)</sup>

Dr Carl Hertzman, a physiatrist assigned to the 93rd Evacuation Hospital in Vietnam, also observed the importance of early intervention physical therapy in the management of wounds to prevent contractures, weakness, and disability. The physical therapy clinic at the 93rd Evacuation Hospital averaged 1,800 patient visits per month. Despite extensive soft tissue injury, early physical therapy emphasizing mobility and strengthening led to successful rehabilitation, with soldiers frequently returning to duty.<sup>15</sup>

Between 1966 and 1973, 47 physical therapists served in 3 of the 4 combat zones in Vietnam. These physical therapists treated soldiers, civilians, and prisoners of war from all participating allied nations, in addition to U.S. soldiers wounded in combat. Besides direct patient care and consultant

roles, physical therapists serving in Vietnam developed instructional courses to train the Vietnamese in basic bedside physical therapy techniques. They compiled an illustrated basic course text that was translated into Vietnamese to assist the Vietnamese nationals in continuing physical therapy services at the 2,700-bed hospital in Cong Hoa.<sup>12,16</sup>

Physical therapists in Vietnam were invaluable to the military, providing care for a range of conditions, including joint injuries, post-surgical rehabilitation, burns, and other wounds. They demonstrated the value of early intervention physical therapy by improving the soldiers’ prognosis, outcome, morale, and return-to-duty status. More importantly, physical therapists in Vietnam richly contributed to the body of knowledge related to combat medicine. Maj Gray noted, “Physical therapy has finally been recognized as a necessity for early treatment of combat wounds and has received full status as a medical team member with the 44th Medical Brigade.”<sup>16(p3)</sup> She concluded that physical therapy “administered to the patients after surgery by trained physical therapy personnel would restore patients to duty more quickly.”<sup>16(p3)</sup>

During Operations Desert Shield and Desert Storm (ODSS) 3,726 (34%) of the overall injuries were musculoskeletal.<sup>17</sup> A National Guard mechanized infantry unit activated for ODSS reported 727 orthopedic injuries during deployment. Of these, 602 (94%) were non-emergent, with only 138 (22%) requiring a minor or operative procedure that included injection or referral to a specialist beyond the brigade level.<sup>18</sup> Travis and Cosio<sup>19</sup> found that 52% of patients evacuated to Madigan Army Medical Center (MAMC) from ODSS had at least one orthopedic diagnosis. However, the evacuation diagnosis was not substantiated in 40% of these cases, and 38% were exacerbations of pre-existing conditions. Physical training and job-related injuries accounted for 30%. Low back pain was the most frequent pre-existing condition (26%) that resulted in medical evacuation to MAMC. Travis and Cosio reported that a very high percentage of orthopedic patients were immediately returned to duty after evaluation at MAMC, with some requesting return upon arrival. Other patients felt their injury never warranted medical evacuation out of the combat zone, but once placed in the evacuation system, they found it impossible to return to duty. Travis and Cosio<sup>19</sup> concluded that a lack of orthopedic expertise at the battalion and brigade levels was the primary reason for the excessive evacuations and could pose a considerable risk to future operations in sustained combat. Had a physical therapist been deployed at the brigade level to assist with musculoskeletal evaluation and treatment, many of these unnecessary evacuations for routine orthopedic conditions could have been avoided.

Wasserman et al<sup>20</sup> found that 25% of total healthcare visits during ODSS were due to nontraumatic orthopedic conditions, with musculoskeletal injuries the most common specific indication for soldiers seeking healthcare during the conflict. Physical therapists deployed to Southwest Asia in support of ODSS<sup>10</sup> saw patients requiring an average of 2 outpatient visits, and 85% of these patients returned to duty without requiring any further intervention.<sup>12</sup> Comparatively,

it required 21 days to evacuate 1,177 soldiers with soft tissue injuries during ODSS for an estimated replacement cost of \$836,885.<sup>17</sup> Had physical therapists been deployed in greater number or further forward on the battlefield to assist the soldiers' healthcare team in managing these injuries, the number of evacuations and overall replacement costs could have been considerably lower.

Military physical therapists were routinely deployed in support of the North Atlantic Treaty Organization's (NATO) peacekeeping efforts in Bosnia and Kosovo, as well as humanitarian operations in El Salvador, Ethiopia, Thailand, and Sri Lanka. Their roles included conducting musculoskeletal evaluations, developing field-ready rehabilitation programs, and implementing injury prevention procedures.<sup>21</sup> They also served as subject matter experts, helping host nations in underdeveloped countries establish comprehensive rehabilitation programs and training programs for physical therapists.<sup>22</sup>

During the initial deployment in Bosnia, 17% of all patients at the 21st Combat Support Hospital (CSH) were seen by a physical therapist, the vast majority being orthopedic.<sup>23</sup> Minor traumatic and nontraumatic musculoskeletal injuries were sent directly to the physical therapist without prior evaluation. Soldiers could also be referred directly to physical therapy after evaluation by a medic or physician assistant at an outlying forward-deployed battalion aid station. Patients with open wounds, suspected fractures, or severe orthopedic complaints were initially screened in the emergency department and evaluated by an orthopedic surgeon. Of those seen by a physical therapist, 78% were returned to duty without restrictions, while 20% required a temporary duty restriction. Perhaps most importantly, only 2% of the patients seen by a physical therapist required medical evacuation or overnight hospitalization. In addition to direct patient care, the physical therapists established a multidisciplinary wellness program for deployed soldiers and traveled to remote military compounds to evaluate and treat soldiers unable to be transported to the hospital.<sup>23</sup>

The experiences of physical therapists deployed to Kosovo are similar to those from Bosnia. Of all soldiers entering the 67th CSH, 26% were evaluated and treated by a physical therapist, with the physical therapy clinic being the second busiest clinic after the emergency department. Once again, physical therapists were active in injury prevention and conducted site visits to host nation hospitals, outlying bases, and facilities for allied forces.

The 2nd Ranger Battalion incurred a casualty rate of 35% during Operation Just Cause in Panama, with 217 Rangers sustaining 281 injuries. Most of these were musculoskeletal and nonsurgical, and 90% occurred during the initial airborne insertion. Most of the injuries were to the lower extremity, particularly the ankle. Closed fractures and ankle sprains caused three times as many Rangers to be forced out of duty as did gunshot wounds or open fractures. In an unpublished presentation, Creedon shared data that a physical therapist working directly with a Ranger battalion resulted in shorter lost duty time and improved deployability rates compared

to Ranger battalions without physical therapist intervention (Data from presentation to Chief, Physical Therapy Section, Army Medical Specialist Corps, by JF Creedon, January 2000).

As a result of the demonstrated success of physical therapists serving as musculoskeletal specialists, the most elite forces in the U.S. Army began requesting and receiving physical therapists to support the Special Operations Forces (SOF) Enhanced Physical Readiness Initiative. In 1999, the U.S. Army Special Operations Command (USASOC) validated a manpower requirement for a physical therapist in each Ranger Battalion, active component Special Forces Group, 160th Special Operations Aviation Battalion, and the Special Warfare Training Group (USASOC Memorandum, Validation of Manpower Requirements for Physical Therapists, Headquarters, Special Operations Command, Ft. Bragg, NC, 7 December 1999). These elite forces recognized the value that physical therapists provided as specialists in orthopedics and sports medicine, expediting recovery from injury and offering a quicker return of the soldier to duty. The USASOC also recognized that having a physical therapist providing care forward on the battlefield to treat musculoskeletal injuries meant the soldier was more likely to remain with his unit and decreased the need for costly medical evacuations. In addition to providing direct patient care, physical therapists serve as consultants to commanders for health promotion and injury prevention.

Reducing medical evacuations for non-emergent, non-battle injuries, particularly common musculoskeletal conditions, is a key metric for military leaders. However, tracking and categorizing these conditions in deployed settings is less precise than in traditional healthcare systems due to broader classification systems. Medical diagnoses for deployed service members are typically grouped into 3 broad categories: disease, non-battle injury (NBI), and battle injury (BI). Often, disease and non-battle injuries (DNBI) are combined to distinguish combat-related from non-combat injuries.

#### Key Data Points<sup>24,25</sup>:

- DNBI has historically been the leading cause of casualties in military operations.
- In the early stages of Operation Iraqi Freedom:
  - Musculoskeletal injuries accounted for 12.8% of all aeromedical evacuations.
  - The highest category was “injury and poisoning” at 28%, which included:
    - » Fractures
    - » Dislocations
    - » Sprains and strains
    - » Poisonings and other trauma
- A systematic review of DNBI impact over the past 20 years found:
  - Overall DNBI incidence rate: 50.97 per 1,000 person-years
  - Disease incidence: 20.32 per 1,000 person-years
  - Non-battle injury incidence: 6.88 per 1,000 person-years
  - Battle injury incidence: 6.83 per 1,000 person-years

## The Value of Embedded Physical Therapists

The cost of aeromedical evacuations from a combat zone is significant. Nguyen<sup>26</sup> reported a conservative estimate of \$3,873 per evacuee from Iraq (via Kuwait) to the Level IV military hospital in Germany. Moore et al,<sup>27</sup> in consultation with physicians at a Combat Support Hospital in Iraq, projected that 17.7% of soldiers (3,979 total) would have required evacuation to Germany if physical therapists had not been deployed to the combat zone. This would have resulted in:

- A total evacuation cost of \$28.7 million.
- A potential savings of \$15.4 million using Nguyen's cost estimate.<sup>27</sup>

However, the true cost of evacuation extends beyond finances. When soldiers are evacuated:

- They are less likely to return to duty in-theater.
- Units lose combat readiness and morale.
- Replacements require time and resources, and may not always be available.
- Ground evacuation involves convoy operations that increase personnel exposure to hostile threats.

By embedding physical therapists with combat units:

- Earlier access to care is possible.
- The need for evacuation is reduced.
- Risk to personnel and logistical burdens during transport are minimized.

Creedon's unpublished study of the 2nd Ranger Battalion with an embedded physical therapist showed (Unpublished presentation to Chief, Physical Therapy Section, Army Medical Specialist Corps, by JF Creedon, January 2000):

- 95% deployability, compared to 88% in the other two battalions without a physical therapist.
- 48 more Rangers available for deployment.
- A soldier in a battalion without a physical therapist was 2.3 times more likely to be non-deployable.
- The 2nd Battalion also reported the fewest lost duty days due to injury-related restrictions.

Army physical therapists were routinely deployed in support of Operation Enduring Freedom and Operation Iraqi Freedom as part of Brigade Combat Teams and within Combat Support Hospitals. Over a 6-year surveillance period, they accounted for 35.8% of the brigades' total medical workload.<sup>27</sup> Of the 48,879 soldiers with new evaluations, 21,653 (44.3%) had direct access to physical therapists. Remarkably, approximately 98% of the soldiers with first-time evaluations by physical therapists were returned to duty, either fully or with only temporary limited duty restrictions.<sup>27,28</sup>

These examples of deployed military physical therapists serving as primary evaluators for neuromusculoskeletal

conditions clearly illustrate the benefits of granting them a full complement of clinical privileges to optimize patient outcomes. Following the Vietnam conflict, a shortage of orthopedic surgeons created a critical gap in care for musculoskeletal complaints. Physical therapists, with their specialized training in neuromusculoskeletal evaluation and treatment, effectively filled this gap. Over time, this role evolved into a viable practice pattern within the MHS during peacetime operations as well, including direct access, expanded clinical privileges, and interdisciplinary referral authority, long before the private sector began to incorporate similar models. For over 50 years, military physical therapists have practiced under these expanded privileges, including the ability to order diagnostic imaging, refer directly to other providers, and prescribe a limited formulary of medications. These capabilities enable physical therapists to practice at the top of their license, enhancing access and reducing care delays, particularly in deployed and resource-limited settings. Importantly, numerous studies have shown that this is safe and effective. Now, with the current and projected shortage of primary care providers in the United States, physical therapy offers a well-established, evidence-based framework for physical therapists to be primary care providers, especially for patients with neuromusculoskeletal complaints.

## Service-Specific Overview

Army physical therapy includes approximately 300 military officers and a similar number of government civilian and contract physical therapists. Most Army physical therapists enter through the Army-Baylor physical therapy program, with smaller numbers entering through Reserve Officer Training Corps (ROTC) education delay programs after completing physical therapy school. Currently-licensed physical therapists can enter through the direct accession route, which consists of a written application and interview process described in the accession section below.

Army physical therapists provide services in a variety of settings, including military hospitals and clinics, as well as direct support to soldiers within various military commands, such as Forces Command (FORSCOM), Training and Doctrine Command (TRADOC), Army Futures Command (AFC), and Special Operations Command (SOCOM). In addition to clinical services, Army physical therapists conduct research, teach, and serve in administrative roles throughout the Army and the Department of Defense. Physical therapists are integral to the recently developed Holistic Health and Fitness (H2F) System. The H2F is the Army's primary means for achieving soldiers' physical and mental readiness. The military defines readiness as "a force's ability to fulfill its assigned missions and tasks."<sup>29(p3)</sup> It encompasses both the physical and strategic aspects of preparedness, including the ability to engage in combat and respond to diverse operational demands. The H2F program will add teams of physical therapists, occupational therapists, dietitians, athletic trainers, strength coaches, and cognitive enhancement specialists to 110 brigades over the next decade. The H2F program is designed to optimize physical and non-physical performance, reduce injury rates, improve rehabilitation after injury, and increase the overall effectiveness of the total Army.<sup>30</sup>