

Brigade Combat Team Physical Therapy Guide



Physical Therapy Brigade Combat Team

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Chapter 1

Brigade Combat Team Physical Therapy

1-1 Introduction

Injuries to the musculoskeletal systems are the primary cause of outpatient medical visits and hospitalization among Soldiers, resulting in approximately 2.4 million medical visits to our medical treatment facilities and accounting for \$548 million dollars in direct patient care costs in 2007.¹ Musculoskeletal injuries account for over 11 million limited duty days secondary to physical profiles and 80% of these conditions are due to repetitive overuse.² Additionally, musculoskeletal conditions comprise approximately 75% of all disability cases and over 1/3 of all Veteran's Affairs medical costs.^{3,4}

In a deployed setting, musculoskeletal non-battle injuries account for 87% of all injuries. The rate of non-combat related musculoskeletal injuries are estimated to occur 6.5-7 times more frequently than combat related injuries. Over 75% of all medical evacuations from the Operation Iraqi Freedom/Operation Enduring Freedom (OIF/OEF) theater of operations were due to non-combat musculoskeletal injuries associated with back, knee, foot/ankle, shoulder, hand/wrist, and neck pain. The typical Soldier medically evacuated from the OIF/OEF Theater was a 29 year old Soldier in need of additional musculoskeletal care, resulting in a negative impact on operational capabilities.⁵ The primary focus of physical therapy services in the brigade combat team is to enhance unit readiness and physical performance through injury prevention, human performance optimization and timely rehabilitation.

1-2 Historical Perspective

a. In 1997 a Physical Therapist was placed forward in 2nd Battalion 75th Ranger Regiment. A study was completed to determine the significance of physical therapy services and the 2/75 unit readiness was compared to 1/75 and 3/75. This study indicated that during this period of time 2/75 was more deployable than the Regiment's other 2 Battalions. This evidence was enough for the 75th Ranger Regiment to give up three Weapons Platoon Leader positions on their TOE to free a line for each Battalion to have an assigned physical therapist. Since 2000, Army physical therapists have continued to serve the Rangers as combat multipliers in garrison and during deployments. A Ranger Battalion Commander commented that the physical therapist in his Battalion was the "most valuable player" in ensuring his unit's combat physical readiness.

b. Following the success of the Ranger physical therapy model, the United States Army Special Operations Command (USASOC) requested assignment of physical therapists to support the Special Forces mission. Since the summer of 2003, Army physical therapists have provided frontline musculoskeletal care, injury prevention intervention, and the physical component of human performance optimization for each of the five respective active-duty Special Forces Groups.

c. Physical therapists' transition to the brigade combat teams (BCTs) started in 2003 at Ft. Lewis with the professional officer filler information system (PROFIS) deployment of one physical therapist with 3rd Brigade, 2nd Infantry Division. Since that time most BCT

physical therapists have continued to deploy as PROFIS fills to BCTs deployed in support of OIF/OEF and have continued the role as combat multipliers in individual and unit medical readiness. The conversion from BCT PROFIS physical therapists to organic TOE positions started in 2006 with the 1st and 2nd BDE, 25th Infantry Division TOE authorizations. The significant contributions and dedication to Soldier readiness exhibited by previous BCT physical therapists has ultimately resulted in 45 BCT physical therapy TOE authorizations for Fiscal Year 2013.

1-3 Purpose

This document-

- a. Establishes policies for physical therapists assigned to Brigade Combat Teams
- b. Defines physical therapy roles, responsibilities and services within the BCT

1-4 References

Required and related publications are listed in appendix A

1-5 Explanation of abbreviations and terms

Abbreviations and special terms used in this regulation are explained in the glossary

1-6 Mission Statement

Physical Therapy will support the Brigade Combat Team by enhancing unit readiness and physical performance through strength and conditioning, prevention, early recognition, and aggressive management of musculoskeletal injuries.

1-7 Vision Statement

The brigade physical therapy team will be a combat multiplier by applying the principles of sports medicine as far forward on the battlefield as possible. This will include strengthening of uninjured Soldiers, determining and reducing injury vulnerability, making a definitive diagnosis of injured Soldiers, and aggressive treatment for facilitating rapid return to duty. Physical Therapy will collaborate with the Brigade leadership and medical staff to ensure the highest level of Soldier and unit physical readiness through injury prevention, physical fitness and educational human performance optimization (HPO) strategies, and cutting edge rehabilitation.

1-8 Roles and Responsibilities

a. The brigade physical therapist is a subject matter expert in all aspects of the evaluation and management of musculoskeletal injuries, injury prevention, and performance enhancement. The BCT physical therapist health care roles include:

(1) Injury Prevention

(a) Injury surveillance

(b) Perform screening to determine injury vulnerability

e.g. Functional Movement Screen (FMS) and Y balance.

(b) Injury tracking: To include quarterly feedback to Brigade Commander Brigade Surgeon and staff on injury rates and trends impacting unit effectiveness.

(c) Unit/Leader advisement on physical training enhancements

- (d) Promotion of nutrition, health and wellness
- (2) Human Performance Optimization (HPO)
 - (a) Serve as the Brigade advisor for the physical aspects of HPO by implementing strength and conditioning programs that maximize combat relevant fitness. (e.g. Building the Soldier Athlete Program)
 - (b) Provide education to unit personnel (Training NCOs, and medics) using a “Train the Trainer” concept to ensure that proper strength and conditioning techniques are utilized in the Brigade.
- (3) Evaluate/Manage musculoskeletal injuries
 - (a) Early intervention to optimize function, minimize disability, and to enhance rapid return to duty.
 - (b) Act as liaison with medical treatment facilities and soldiers needing MTF level of care at orthopedic and other specialty clinics
 - (c) Provide education and training in musculoskeletal assessment and treatment to Brigade medical staff ensuring optimal care as far forward as possible
- (4) Mass casualties
 - (a) The BCT physical therapist will serve as directed by the senior medical officer present.

b. The BCT physical therapist will supervise the physical therapy section to include daily operations, facilities management and budget control.

c. The BCT physical therapy technician (68WN9) is an inextricable member of the physical therapy section and assists the BCT physical therapist with the healthcare and administrative roles outlined above. The scope of care and utilization of physical therapy technicians is outline in chapter 3. Without a physical therapy technician, the capabilities of the physical therapy section are degraded, resulting in increased waiting times for routine care and a limited ability to fulfill the roles of unit injury prevention and HPO.

1-9 Brigade Combat Team Physical Therapy Section Command and Control

- a. Recommended Brigade Physical Therapist Rating Scheme
 - (1) Rater: Brigade Surgeon
 - (2) Consideration of Intermediate Rater: Installation Physical Therapist or Senior Physical Therapist in area of operations (deployment)
 - (2) Senior Rater: Brigade XO or Commander
- b. Recommended Physical Therapy Technician (68WN9) rating scheme
 - (1) Rater: Brigade Physical Therapist
 - (2) Senior Rater: Brigade Surgeon

Chapter 2

Command and Control

2-1 Introduction

According to FM 3-90-6, The Brigade Combat Team (BCT) presents unique command and control challenges. Specifically, BCTs have a greater number and diversity of units that function in larger areas than past generations. The diversity and size of the BCT emphasizes that the physical therapy team needs to establish positive lines of communication with the Brigade commander, subordinate commanders and staff, the Brigade Surgeon, and staff at the local medical treatment facility.

2-2 Purpose

This chapter outlines recommendations regarding the command and control of the physical therapy section assigned to the BCT.

2-3 References

Required and related publications are listed in appendix A

2-4 Administrative Responsibilities

- a. Brigade Commander will provide the BCT physical therapy section with vision and intent for the Brigade's physical training program
- b. Brigade Surgeon
 - (1) Provide the medical supervision and guidance IAW AR 40-68
 - (2) Act as the rater unless out ranked by the assigned physical therapist
- c. Brigade XO or Commander will be the senior rater based on rank of the physical therapist
- d. S4/Logistics:
 - (1) Physical Therapy operations in the brigade area of operations (AO) are funded by the BCT
 - (2) Logistical support provided through the Brigade Medical Support Officer
 - (3) Provide funding for continuing medical education to meet credentialing requirements IAW AR 350-1
- e. "Division" Physical Therapist. This position is not authorized, but rather an extra duty for the senior ranking BCT PTs which includes:
 - (1) Liaison/Communication: link between BCT PTs and Division cell (DIV Surgeon/PA) communicating the activities/impact of all the Division's physical therapists injury prevention (IP), HPO, Rehabilitation , and research/outcomes efforts. Also, link between the TOE and TDA physical therapy services with direct communication with the "Installation PT" providing updates on all TOE IP, HPO, Rehabilitation, and research/outcomes endeavors.
 - (2) Mentorship of all the BCT PTs.
 - (3) Standardization of clinical care, quality improvement, research/outcomes, injury prevention, and human performance optimization training for all brigades. Insures that the components of the BCT Guide are being implemented in a

standardized fashion with all the BCT PTs of the Division (including Division Physical Therapy assets located at other installations).

(4) Research: coordinate research and data collection across all brigades, and consolidate to 65B centralized research bodies.

f. “Installation Physical Therapist”: This position is not authorized, but rather an extra duty of the Chief, Physical Therapy at local Medical Treatment Facility (MTF):

(1) Peer Review

(a) In garrison: physical therapists at local MTF

(b) On deployments: Peers in AO or Brigade Surgeon as needed

(2) Mentorship to TDA physical therapists and “Division” physical therapists.

(3) Credentialing Review/Approval

(4) Oversight of installation wide (TDA/TOE/Morale, Welfare, and Relief(MWR)) standardization of clinical care, quality improvement, injury prevention, research/outcomes and human performance optimization training.

(5) Liaison/Communication: Link between TOE IP, HPO, and rehabilitation efforts (via communication with the “Division PT”), medical treatment facility IP, HPO, and rehabilitation efforts, and other installation wide IP and HPO efforts (e.g. MWR activities). Communicates installation wide efforts to all pertinent Army leaders (e.g. Garrison and MTF commanders, Regional Medical Command PT Consultants, 65B Consultant, and Corps Chief) as indicated to facilitate efficient use of resources, standardization of services/programs, and synchronization of IP, HPO, and rehabilitation activities available across the installation to all DoD beneficiaries.

(6) Assists Human Resources Command in identifying and preparing BCT PTs prior to them being assigned in a TOE authorized position.

g. Medical Treatment Facility Information Management (IM) Division:

(1) Electronic medical records access, accounts and training

(2) Other IM support as needed

h. Theater Information Division

(1) Medical Communication for Combat Casualty Care (MC4)

(2) Joint Patient Tracking Application (JPTA)/ Theater Medical Data Store (TMDS)

(3) Joint Medical Evaluation Work Station (JMEWS)

2-5 BCT Physical Therapy Clinic Area of Operations

To maximize BCT combat readiness, the physical therapy section must establish proximity to Brigade Soldiers, and obtain dedicated space and equipment. The priorities of the brigade physical therapy section vary in the garrison and in the deployed environment:

a. Garrison

(1) Establishing BCT Sports Medicine/Physical Therapy Clinic in a geographic location that is conducive to access by the Brigade Combat Team Soldiers.

- (2) Obtaining the square footage allotment to accommodate a large volume of patients and the space required to conduct combat focused rehabilitation and performance enhancement.(See Chapter 5- Logistics)
- b. Deployments: situation/deployment dependent.
 - (1) Coordinating patient care with Brigade Support Battalion Medical Company medical providers for optimal patient outcomes.
 - (2) Potentially establishing a mobile clinic to support forward operation bases and combat outposts within BCT area of operations.(See Appendix B- Theatre Movement)
 - (3) Leveraging existing resources (gymnasium, pools, physical training fields, etc) for the execution of the BCT physical therapy mission.

Chapter 3

Patient Care in the BCT

3-1 Introduction

Physical therapists have conducted direct access neurological and musculoskeletal evaluation and treatment in the US Army since 1972.⁶ Evidence supports that physical therapists have been valuable members of the uniformed service health care team, and also exhibit the knowledge and skill set to provide safe and effective musculoskeletal care.⁷ In fact, a 2005 review involving over 472,000 physical therapy patient visits at 25 military sites revealed no reported adverse events resulting from physical therapists' diagnoses or management.⁸ Research demonstrates that military physical therapists also provide accurate assessment of musculoskeletal conditions,⁹ to include the ability to identify more severe orthopaedic and medical conditions requiring referral to medical specialists.¹⁰⁻¹³ Finally, Army physical therapists have demonstrated their value during deployments and the ability to successfully manage large volumes of patients with non-surgical musculoskeletal conditions and reduce the numbers of medical related evacuations.^{14, 15}

3-2 Purpose

This chapter provides the scope of care, credentials, common conditions treated in physical therapy, referrals, medical documentation, and recommended continuing education courses for physical therapists and physical therapy technicians assigned to the Brigade Combat Team (BCT).

3-3 References

Required and related publications are listed in appendix A

3-4 Physical Therapists Roles and Responsibilities

a. Scope of Care

- (1) The purpose of the physical therapist in the BCT is to serve as a combat multiplier by enhancing unit readiness and physical performance. The physical therapist brings a unique set of skills to BCT Soldiers with musculoskeletal injuries.
- (2) The primary objective of placing a physical therapist in the BCT is to serve as a physician extender for Soldiers with musculoskeletal injuries / disorders. When practicing in this capacity, the physical therapist's role is to help reduce the volume of musculoskeletal care on the rest of the BCT healthcare team, allowing them to focus on other facets of healthcare operations.
- (3) The physical therapist will function as a member of the BCT healthcare team by evaluating and treating Soldiers with musculoskeletal conditions without referral from other health care providers; however, referrals for physical therapy intervention may originate from primary care providers within the BCT or from primary care or specialty providers at the local Medical Treatment Facility or within the civilian community.

- (4) Physical therapy intervention involves evaluation, assessment, and treatment through the use of manual techniques, therapeutic and sports/combat specific exercise, physical or chemical therapeutic means, and patient education to maximize Soldier combat readiness.
- (5) Physical therapy personnel also provide injury prevention and human performance optimization (See Chapter 4).
- (6) Provide educational classes related to musculoskeletal injuries or other relevant topics for health care providers, commanders, and units as needed. (examples found at Proponency Office for Rehabilitation and Reintegration website: <http://www.amedd.army.mil/prr/brigade.html>)
- (7) In mass casualty situations, the physical therapist will serve as directed by the senior medical officer present.

b. Clinical privileges

- (1) The Brigade physical therapist must possess Category II clinical privileges. These privileges include the ability to:
 - a. Request appropriate imaging studies
 - b. Assign patients to quarters for up to 72 hours
 - c. Refer patients to specialty clinics
 - d. Write limited-duty profiles according to the guidelines outlined in AR 40-501
 - e. Write prescriptions for medications described in AR 40-68 paragraph 7-2c

(2) Physical therapists desiring to perform additional interventions beyond their current Category II privileging (e.g. electromyography, trigger point dry needling etc) must complete the process for upgrading their privileges through the responsible credentialing office and refer to guidelines outlined in AR 40-68 for additional details.

c. Common conditions

- (1) Physical therapists commonly evaluate and treats injures listed below, however, this list should not be considered exhaustive.
 - a. Neck pain
 - b. Back pain
 - c. Sciatica
 - d. Shoulder pain
 - e. Elbow pain
 - f. Wrist and hand pain
 - g. Hip pain
 - h. Knee pain
 - i. Leg pain
 - j. Ankle and foot pain
 - k. Postoperative orthopedic conditions
 - l. Mild traumatic brain injury
 - m. Balance and movement disorders

3-5 Physical Therapy Technicians Roles and Responsibilities

a. Supervision and Scope of Care

- (1) The physical therapy technician is trained to work as a dependent practitioner, and as such is an extension of and not a replacement for a physical therapist.
- (2) The physical therapy technician shall operate under the protocols and standing operating procedures of the supervising physical therapist.
- (3) The physical therapist is fully responsible for all care administered by the physical therapy technician, regardless of the level of supervision.
- (4) IAW AR 40-68, para 5-2, the supervising physical therapist may delegate some aspects of care dependent on the documented training and competency level of the physical therapy technician, such as gait training directed by privileged providers and protocol-driven treatment plans as referred by orthopedics.
- (5) IAW AR 40-68, para 5-3, the physical therapy technician will fall under the direct supervision of a physical therapist from within the assigned unit's area of operations. Direct supervision must be either "physically present" or "verbal"
 - a. Physically Present: The physical therapist is physically present within the treatment area through all or a portion of care.
 - b. Verbal: The physical therapist is not required to be within the treatment area for direction and supervision, but must be accessible by telecommunications. Another credentialed/privileged provider should be readily accessible and serve as a point of contact for the physical therapy technician during these periods.

b. Duties and Tasks

- (1) The physical therapy technician assists in the provision of brigade physical therapy services under the supervision of a physical therapist. The physical therapy technician conducts patient interviews and performs objective tests and measures as directed by the physical therapist; provides prescribed treatments and procedures; monitors patient response and modifies treatment parameters as directed and within the scope of the therapist's plan of care; provides patient education regarding treatments and injury prevention strategies; and thoroughly documents all patient encounters. The supervising physical therapist determines the level of direct supervision required for these skills based upon the physical therapy technician's education, training and documented competency.
- (2) Military Unique Skills. As specified below, physical therapy technician skills include limited screening of musculoskeletal complaints at or below the knee, peripheral joint mobilization, orthotic fabrication, and wound debridement. These skills, while taught in the 303-N9 Physical Therapy Specialty Program, require skill consolidation and competency assessment during Phase 2 training and at subsequent duty locations.
- (3) These skills are considered essential for deployment.
 - a. Screenings: All screenings occur only under the physically present level of supervision as defined above. All screening documentation must be

countersigned by the supervising physical therapist prior to patient departure.

b. Musculoskeletal screenings at or below the knee will consist of the patient interview and objective tests and measures to include: ROM measurements, manual muscle testing, girth measurements, palpation, and special tests. The physical therapy technician may assist in the development of appropriate treatment plans. The assessment or diagnosis must be determined by the supervising physical therapist.

1. Screening limitations do not preclude technicians from performing a patient interview and tests and measures for other regions. Special tests and treatment planning for these regions do not fall within the physical therapy technician scope of practice.
2. Joint mobilization techniques are initiated only with the prescription and physically present supervision of the physical therapist. The physical therapy technician may perform peripheral joint mobilizations as part of an established treatment plan under verbal supervision of the physical therapist. These techniques are restricted to grades I-IV for the peripheral joints. Spinal mobilizations and Grade V high velocity thrust techniques applied to the spine or extremities are not within this scope of practice and will not be performed by physical therapy technicians.
3. Orthotic fabrication may be performed as prescribed by the supervising physical therapist or under a protocol established with orthopedics or podiatry. With verbal supervision, fabrication is limited to plantar fascial orthotics unless trained and documented competencies exist for other orthotics.
4. Wound debridement is an advanced skill that requires additional training and documented competency. Wound debridement is initiated only with the prescription and physically present supervision of the physical therapist. The physical therapy technician may perform debridement as part of an established treatment plan under verbal supervision of the physical therapist.

c. Sustainment Training and Competency Assessment

- (1) The Brigade physical therapist will verify competency of the assigned physical therapy technician.
- (2) All skills require annual sustainment training and documented competency assessment IAW AR 40-68, para. 5-1 b(1)(c). The BCT physical therapist will document each technician's clinical competency and include the assessment form in the technician's clinical assessment file.

3-6 Referrals

a. Acute and chronic musculoskeletal injuries

- (1) The brigade physical therapist will collaborate with other healthcare providers to maximize utilization of evidence-based guidelines in the management of acute and chronic musculoskeletal conditions (e.g. Screening and Referral Tools for Acute Musculoskeletal Injuries, Low Back Pain Clinical Practice Guidelines.)

(2) Management of Soldiers with musculoskeletal conditions will require a collaborative effort between brigade healthcare providers and the physical therapist.

3-7 Medical Documentation

a. The standard for medical documentation throughout the Department of Defense is the electronic medical record. The purpose of this policy is to ensure continuity of care and patient safety for each healthcare beneficiary across the healthcare spectrum. The BCT physical therapy section will utilize the appropriate electronic medical documentation system to ensure maximum compliance with this policy.

b. This may require coordination with the Medical Treatment Facility Information Management Division for establishing connectivity.

c. During deployment, the physical therapy section will maximize utilization of the current standard electronic medical record system employed in the theater. This will help ensure improved continuity of care for the Brigade Soldiers across each echelon of care in the military healthcare system.

3-8 Experience, Certifications, Continuing education and Recommended Skill Set

a. Recommended Clinical Experience

(1) Two years of outpatient orthopaedic/sports medicine physical therapy experience (May be waived based on physical therapists prior military and clinical experience and recommendations from the Physical Therapy senior leadership)

b. Recommended certifications for Brigade physical therapist

(1) Board certification in Orthopaedic or Sports Physical Therapy

(2) Certified Strength and Conditioning Specialist (CSCS) and/or American College of Sports Medicine Health Fitness Specialist

(3) Combat life saver

(4) Emergency Medical Technician

c. Recommended Continuing Education

(1) Joint Operational Deployment Course (prior to deployment)

(2) COL Douglas A. Kersey Advanced Clinical and Operational Practice Course

(3) Tactical Combat Medical Course (TCMC)

(4) Upper Extremity Occupational Therapy Course

d. Additional Recommended Skill Sets

(1) Manual therapy skills

(2) Upper and lower extremity splinting and casting

e. Recommended Military Training / Education

(1) Captains Career Course

(2) Airborne/Air Assault School (dependent upon specific Brigade requirement)

(3) Expert Field Medical Badge

f. Recommended Continuing Education for physical therapy technician

(1) Tactical Strength and Conditioning Symposium and Facilitators Course

(2) Tactical Combat Medical Course (TCMC)

g. Recommended Skill Sets for physical therapy technicians

(1) Strength and Conditioning Program design and implementation

- (2) Upper and lower extremity Splinting / Casting
- h. Recommended Military Training / Education for physical therapy technician
 - (1) Airborne/Air Assault School (dependent upon BCT requirement)
 - (2) Expert Field Medical Badge

Chapter 4

Injury Prevention and Human Performance Optimization

4-1 Introduction

Physical Therapists expertise is not limited to neuromusculoskeletal evaluation and treatment of injuries. Specifically, their in-depth knowledge of neuromuscular and skeletal anatomy, exercise physiology, biomechanics, exercise prescription, and human performance makes them ideally suited to develop, implement, and maintain Brigade combat team (BCT) injury prevention (IP) and physical fitness human performance optimization (HPO) programs.

The need for this level of expertise and effective IP and HPO programs is supported by the fact that Soldiers are often required to perform high demand tasks in difficult environments. Physical fitness programs designed for HPO help to prepare Soldiers for warfighting by increasing strength, endurance, and mobility. Mission essential tasks can be broken down into their physical components and used to design a comprehensive Soldier fitness program. There are a number of physiologic and psychological benefits that occur with physical training and lead to healthier Warriors. Additionally, from a military perspective, a well designed physical fitness program can result in increased unit cohesion, greater mental alertness and productivity, invigoration of the overall training program, and increased combat readiness. Unfortunately, poorly designed physical fitness programs can lead to increased musculoskeletal and training related injuries. A problem of this magnitude requires a concrete, systematic effort: first to prevent injuries and second, to manage injuries when they do occur.

4-2 Purpose

The purpose of this chapter is to provide specific guidance and resources regarding IP and HPO to the BCT physical therapy service.

4-3 References

Required and related publications are listed in appendix A

4-4 Injury Prevention

According to AR 600-63, “Accidental and overuse injuries to the musculoskeletal system are the single leading cause of lost workdays and physical profiles in the Army and as such, have a significant impact on the readiness and deployability of the Force. The unit commander is the critical agent for injury prevention and is responsible for establishing interventions and monitoring their effect.”

Injury prevention includes injury surveillance, screening, and promotion of wellness programs. Members of the BCT physical therapy service are encouraged to review The Center for U.S. Army Health Promotion and Preventive Medicine recommendations and standard operation procedures for unit leaders responsible for conducting injury prevention programs (website: <http://chppm-www.apgea.army.mil/ptipt/building.aspx>). The following sections also provide additional information and resources specific to the

BCT physical therapy service and their role in injury surveillance, screening, and promotion of wellness programs.

4-5 Injury Surveillance

a. Injury surveillance is critical to the success of controlling injuries within the BCT. Surveillance is defined by AR 40-5 and DA Pamphlet 40-11 as those capabilities and activities necessary to effectively collect, analyze, report, and archive information pertaining to the health status, health hazards, risks, and measures necessary to counteract identified hazards and risks. An effective injury surveillance system identifies injury trends and provides potential mitigation strategies. A successful surveillance program also allows for the evaluation of unit physical readiness training programs and other injury prevention strategies to measure program effectiveness.

b. Unit Level Injury Surveillance: According to TB MED 592 (DRAFT Jan 2006), unit leaders should develop and implement medical surveillance programs to track injuries and profiles with input as needed from medical personnel. The simplest unit-based injury surveillance system would document the number of injury profiles during a given interval of time (for example, week, month, or year) divided by the number of Soldiers or trainees in the unit during the specified time period. Ideally injury surveillance systems would document and report visits to battalion aid stations, troop medical clinics, specialty outpatient clinics, and hospital admissions.

c. Role of the Physical Therapist in Unit Level Injury Surveillance: Although injury surveillance requires a team approach, the BCT physical therapist provides a unique skill set to help analyze the injury surveillance data that is collected by unit leaders. Specifically the BCT physical therapist can assist the Brigade Commander and Surgeon with the following items:

- (1) Standardize the type of injury and profile data collection at the unit level.
- (2) Analyze the aggregate injury data collected by each unit to identify injury trends and its impact on combat readiness.
- (3) Identify injury trends by analyzing unit fitness and military training calendars to determine associations between training and reported injuries and the impact of those injuries on combat readiness.
- (4) Analyze Army Physical Fitness Test (APFT) and other fitness related scores.
- (5) Provide consistent feedback to the command structure.
- (6) Outline strategies to optimize human performance while mitigating injury risk.

d. Key Components for Establishing a Successful Injury Surveillance Program:

- (1) Commanders support and guidance regarding key outcome variables of interest to the unit (e.g. return to duty rates, injury rates, types of injuries, deployable status of Soldiers based on injuries).
- (2) Communication with Brigade S1 to help coordinate unit level injury surveillance.

- (3) Establishing a minimal data set across the brigade that allows for consistent and meaningful feedback to unit commanders. Collaboration between the BCT physical therapist, other BCT medical providers and unit leaders is essential in developing meaningful outcome measures and metrics.
- (4) Support from and communication with the medical treatment facility.
- (5) Clear communication with medical and support staff who are responsible for electronic coding.
- (6) Uniformity of coding injuries.
- (7) Consistent data input and analysis.
- (8) Feedback to commanders regarding injury rates and types of injuries.
- (9) Identification of injury patterns and consistent communication with units.
- (10) Education and implementation of injury control measures for units.
- (11) Accurately assessing the influence of control measures and education provided to the units.
- (12) Education to BCT medical providers and unit leadership on injury prevention strategies, development of special population exercise programs, early identification and injury management, and rehabilitation and reintegration methods are critical to the success of this program.

e. Minimal Data Set (MDS): Metrics to help support the mission of the physical therapy service in the BCT are important at the tactical, operational, and strategic levels. Ideally all metrics would be obtained in established databases that allow for easy data analysis to assist you with your rehabilitative, injury prevention, and human performance optimization goals, while also allowing your data to be searchable by MEDCOM. Therefore, when possible, we are requesting that you enter the appropriate data into the electronic medical record (e.g. AHLTA or MC4) to ensure that all of your accomplishments are visible to the AMEDD and SP Corps senior leadership. However, BCT providers often do not have access to electronic medical records and access is often limited to review every 90 days(AHLTA and MC4 queries are only accurate after 90 days), thus potentially limiting local command requests for weekly or monthly updates. Therefore, local data collection methods will help you answer questions that arise from your BCT leadership in a timely and efficient manner. From a strategic level the collected data (local or electronic medical record) will also allow the Corps to continue to assess and demonstrate the importance of the Brigade physical therapy service in Soldier musculoskeletal healthcare, injury prevention, and human performance optimization.

In general, you will be required to collect workload (new, follow-up, and treatment appointments) and 5 additional data points on all new patients (direct access, referral, mechanism of injury, body region, and deployability). This data set will be called the “Brigade Injury Analysis Report (BAR)”, and will be required to be submitted to your Division and Installation Physical Therapist on a monthly basis. The goal will be for you to submit this report by the 5th of each month. The Installation Physical Therapist will then submit all reports to the AMEDD Center and School project lead by the 10th of each month. The items included in the recommended minimal data set (MDS) are outlined in appendix C and a pre-prepared excel sheet will help make the process easier.

In addition to the MDS you may be required to track additional metrics based on the goals of your Brigade leadership team. A maximal data set excel sheet has been developed to help standardize other potential metrics of interest. If your Brigade requests that you collect additional information, first reference the maximal data set excel sheet. If the information your Brigade leadership team requests is not part of the maximal data set excel sheet, please contact the AMEDDC&S point of contact. The AMEDDC&S point of contact will help you develop the metric and will also include it future versions of the maximal data set to help standardize metric collection across the Brigades.

4-6 Injury Screening in the BCT

The goal of injury screening is to identify BCT Soldiers with musculoskeletal conditions or risk factors that may predispose them to more long-term time loss injuries or disability. Similar to a pre-season physical, injury screening allows the command to identify at-risk Soldiers prior to the development of physical limitations that can impact their deployable status or their ability to physically perform required tasks. Furthermore, proper injury screening can prompt changes in training regimens that can enhance performance and ultimately optimize the combat readiness of the unit.

Although it is unrealistic for an individual physical therapist to conduct injury risk screening for the entire brigade, it is reasonable that the brigade physical therapist act as a consultant and educator on proper injury risk screening. For example, it is recommended that the BCT physical therapy service provide training on injury risk screening to brigade training and medical personnel, thus allowing for the greatest dispersion of the selected screening tool. This can be accomplished with the cooperation of medics or NCOs in charge of physical training.

a. Part 1. Self Report Screening Questionnaires: Although there are multiple options for injury screening, the program outlined below is evidence-based and provides an outline that could be implemented in a BCT setting either during in processing or during the annual periodic health assessments (PHA). Specifically, a self-report questionnaire can be conducted by unit medics or self administered on-line.

(1). Examples of sample questions may include:

- a. Are you experiencing any musculoskeletal pain that reduces your ability to complete your job (duties/physical training)?
- b. Please list prior orthopedic surgeries and dates.
- c. List recurrent traumatic orthopedic injuries (e.g. ankle sprains, shoulder dislocations).
- d. List recurrent orthopedic conditions (e.g. low back pain, knee pain).

b. Part 2: Evidence-Based Physical Screening Tools. The sports medicine model uses several tests that predict those that are at a higher risk for musculoskeletal injuries, such as the FMS and Y balance (see appendix D). Medics and NCOs in charge of physical training may be trained to implement these screening tools as deemed appropriate by the Brigade Surgeon and BCT physical therapy service. Additional details on evidence based injury screening measures are also located at the Proponency Office for Rehabilitation and Reintegration website: <http://www.amedd.army.mil/prr/brigade.html>

c. Part 3: Based on the self-assessment and the physical screening tools, standards can be developed that would generate a referral to the BCT physical therapy service for further evaluation to help prevent musculoskeletal injuries.

Clearly an injury screening program has the potential to provide very valuable information to the unit leaders and can directly affect unit physical training programs. However, instituting an effective screening program requires involvement of the entire BCT healthcare team, as well as the NCOs leading unit physical training. Command support is essential for the success of this program.

4-7 Injury Screening Prior to Deployment Soldiers who have musculoskeletal conditions that require a permanent (P2 or P3) or temporary profile should be screened at the Soldier Readiness Processing site to determine whether they remain with the rear detachment or deploy into Theater. The BCT physical therapist, in collaboration with the Brigade healthcare team, can screen these individuals to determine which Soldiers with musculoskeletal conditions can be effectively managed in the deployed setting.

4.8 Wellness programs

a. Weight Management – Refer to AR 600-9, The Army Weight Control Program (AWCP), for policy and procedures for screening and enrollment in the AWCP. AR 350-1, Army Training and Leader Development, specifies that the AWCP is separate and distinct from other special conditioning programs. Soldiers recovering from injury, illness, or other medical conditions will require reconditioning. Soldiers who fail the APFT or other unit physical readiness goals will continue participation in regular physical training sessions with the unit. Soldiers who fail to meet AR 600-9 standards will be enrolled in the AWCP and continue participation in regular unit physical training sessions. They should also participate in additional low impact, longer duration caloric expenditure activities. (Please see the Center for Health Promotion and Injury Prevention website <http://chppm-www.apgea.army.mil/> for specific details and recommendations for fitness training).

b. There are also additional Wellness classes (e.g. back class, knee education, etc) that can be conducted and information for various programs is located at the Proponency Office for Rehabilitation and Reintegration website: <http://www.amedd.army.mil/prr/brigade.html>.

4-9 Human Performance Optimization

a. Human Performance Optimization
In 2006, The Department of Defense (DoD) Health Affairs requested the Uniformed Services University of Health Sciences (USUHS) to initiate the development of a strategic plan for HPO for the DoD. Results and recommendations from this conference are summarized in a 2007 Military Medicine publication entitled, “Human Performance Optimization: An Evolving Charge to the Department of Defense.”¹⁶ The publication stresses that HPO is multi-factorial and includes, but is not limited, to such areas as 1) achieving and sustaining functional fitness, 2) performance nutrition, 3) cognitive

readiness, 4) psychological readiness, and 5) assessing environmental threats. Additionally, this report concluded that a robust HPO program may ultimately provide benefits such as enhanced mental and physical resilience, reduced injury and illness, and improved ability to accomplish the mission.¹⁶

Physical therapists training make them an invaluable member of a multidisciplinary HPO team (e.g. BCT primary care providers, nutrition care, and neuropsychology). In particular, BCT physical therapists provide commanders with a resource that is responsible to develop, implement, and maintain physical fitness and educational programs that are primarily targeted at the physical component of HPO.

b. Physical Training:

The primary purpose of unit physical training is to meet the physical requirements of the unit missions. Training for the APFT is of secondary importance. To the extent that training for the APFT compromises a unit's mission readiness, that program should be modified to better meet mission demands, optimize human performance, and reduce the potential for injury.

c. Physical Therapy's Role on Brigade Staff:

The BCT Physical Therapist is a unique asset for the commander. Consistent with AR 40-68, the physical therapist's background in injury prevention and human performance allow them to provide expert physical training, injury assessment, and human performance education. The BCT physical therapist should monitor injury trends and make appropriate recommendations for their reduction. The physical therapist should fully understand the physical requirements of the Soldiers in the brigade and evaluate physical training practices to ensure they meet those requirements. It is the duty of the physical therapist to ensure that BCT leaders understand the value of these practices.

d. Unit Physical Training Support:

Most unit missions require a mix of strength, endurance, and mobility proficiency. Consistent training in each of these components is essential for optimal performance. Brigade physical therapists should work with leaders to ensure that sections are effectively balancing the competing interests of strength, power, and endurance, while minimizing injury risk. If the unit is solely relying on the APFT events for training, it is important to offer agility, power, push/pull strength, and anaerobic endurance assessments(see Appendix E for suggested HPO assessment measures). By testing each component separately, relative weak areas can be identified and improved. Furthermore, there is value in tactical assessments (ACUs, boots, protective gear, etc) that combine strength, endurance, and movement skill demands. (For details on additional unit physical training support please see <http://www.amedd.army.mil/prr/brigade.html>.)

e. Deployment Fitness:

Preparation for deployment requires an emphasis on physical as well as operational readiness. The BCT physical therapist service should assist in the development of individual and group physical training programs to enhance physical readiness and optimize human performance relevant to the BCT's mission essential tasks.

The need for such physical training programs cannot be overemphasized. In the current military environment, Soldiers may deploy within weeks of completing basic combat and advanced individual training. It is imperative that they are physically prepared to meet the challenges of mission requirements on the battlefield. Training geared toward cardiovascular, abdominal, and upper body muscular endurance may be inadequate to prepare Soldiers for combat environments that require load carriage capabilities, speed, agility, and upper and lower body strength and power. The BCT Physical Therapist should be utilized to the maximal extent needed to mitigate and prevent de-conditioning and physical training related injuries prior to and during deployment through the facilitation and design of mission relevant physical training programs.

f. Education

If brigade physical therapists are to fulfill their potential role as injury prevention and human performance experts, they must dedicate the time required to develop and present the education soldiers and leaders need. There are numerous resources available to assist the BCT physical therapy service in their role as unit physical training educators and advisors: Injury prevention and HPO manuals such as “Building the Soldier Athlete” provide healthcare providers, unit leaders, and service members sound injury prevention and performance enhancement education and a copy of this manual is located at the Proponency Office for Rehabilitation and Reintegration website:
<http://www.amedd.army.mil/prr/brigade.html>

4-10 Research/Health Promotion Projects

Based on command guidance, the BCT physical therapists may also be tasked to perform injury prevention and human performance research to enhance physical readiness of the Brigade. Historically, research and health promotion projects previously done with line units have led to physical training programs that improved the physical performance while mitigating injuries among the Soldiers within the unit. Brigade physical therapists that are tasked to take on such projects are encouraged to contact researchers at the United States Army Baylor University Entry Level Doctoral Program in Physical Therapy (<http://www.baylor.edu/graduate/pt/splash.php>), West Point Physical Therapy Sports Medicine Fellowship (<http://kach.amedd.army.mil/index03z5.htm>), Brooke Army Medical Center Orthopaedic Manual Therapy Fellowship (<http://www.baylor.edu/OMPT/index.php?id=52449>) United States Army Research Institute of Environmental Medicine (<http://www.usariem.army.mil/index.htm>) or epidemiologists at the Center for Health Promotion and Preventive Medicine (<http://chppm-www.apgea.army.mil/>) to receive assistance with proper study design and approval process guidance.

CHAPTER 5

BCT Logistics issues for the PT

5-1 Introduction Physical therapists integral to the Brigade Combat Team (BCT) will encounter logistical challenges in the garrison and deployed environments.

5-2 Purpose This chapter is intended to clarify medical logistic operations in both settings and provide the physical therapy service with the tools they need to successfully equip themselves in the contemporary operating environment.

5-3 References

Required and related publications are listed in appendix A

5-4 Types of Supplies

There are ten military classes of supply. The Brigade Physical Therapist will be most concerned with Class VIII, Medical Materials. Virtually everything in the physical therapy clinic excluding the computer equipment and the installation furniture is considered Class VIII supplies. Many of the items like gym equipment can also be considered Class II, but if we focus on the piece of equipment's applicability in the medical arena it is also considered Class VIII, and can be found or added to the Class VIII catalog system and ordered through medical logistics channels.

Class VIII supplies, as well as most other classes of supply, are considered Expendable, Non-expendable, or Durable.

Expendable items are those items consumed in use such as theraband, tape, aquasonic gel, and splinting material. These items are typically stocked in the clinic and are utilized at a predictable rate. The physical therapy service must communicate the usage rate with the medical logistic support channels.

In order to maintain accountability and ensure proper medical maintenance is performed, **non-expendable** or pilfer-able items must be added to a property book. Examples of non-expendable items include: high low tables, electrical stimulation/ultrasound machines, and gym equipment.

Durable supplies can be expensive or pilfer-able but are different in that they are not expected to last indefinitely and they are not on the property book. Durable goods are only authorized for purchase by the Company Commander. Examples of durable items include small tools and equipment that are not expendable, but are not of sufficient value



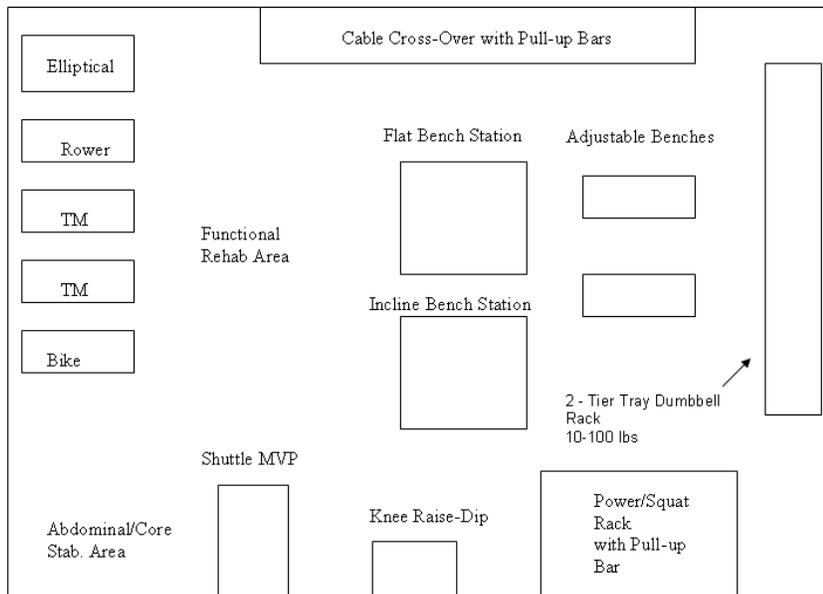
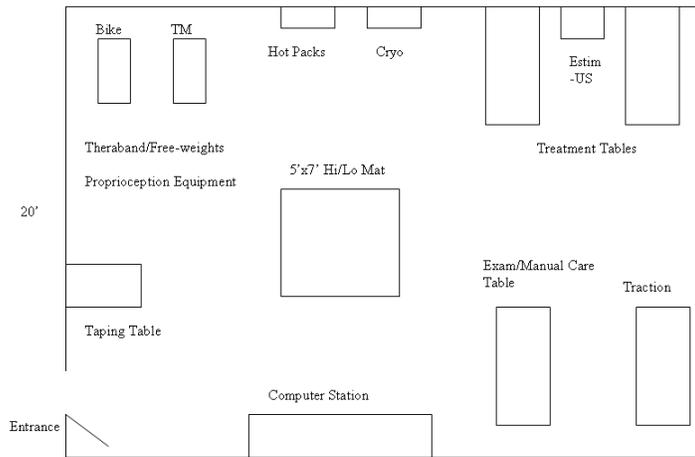
Figure IV-1. Classes and Subclasses of Supply

to be placed on a property book. In many cases physical therapy personnel may have to check with supply personnel to see if an item is considered durable or non-expendable.

5-5 Basic Physical Therapy Equipment

The BCT physical therapy section may vary drastically from brigade to brigade and from garrison to the theater of operations. In garrison the physical therapy section may be consolidated into a troop medical clinic, a stand-alone clinic, or within a brigade fitness facility. The Brigade Commander's intent and availability of facilities governs the design of the brigade physical therapy clinic. It is essential that the therapist have the space and equipment to meet the rehabilitation and performance enhancement needs of the supported population. Generally, a single therapist clinic with one to two support staff warrants a facility of at least 500 square feet. Less space reduces the positive impact of the Physical Therapy Section on Brigade readiness.

The adjacent figure demonstrates how 500 sq ft can accommodate areas for evaluation, treatment, rehabilitation, and management. Such a facility will have substantial up front costs to equip and a modest annual support budget. Given more money and a larger footprint this space could easily be expanded to include facilities to accommodate strength and conditioning equipment. The image below depicts the possible arrangement of a 2000 sq ft facility.



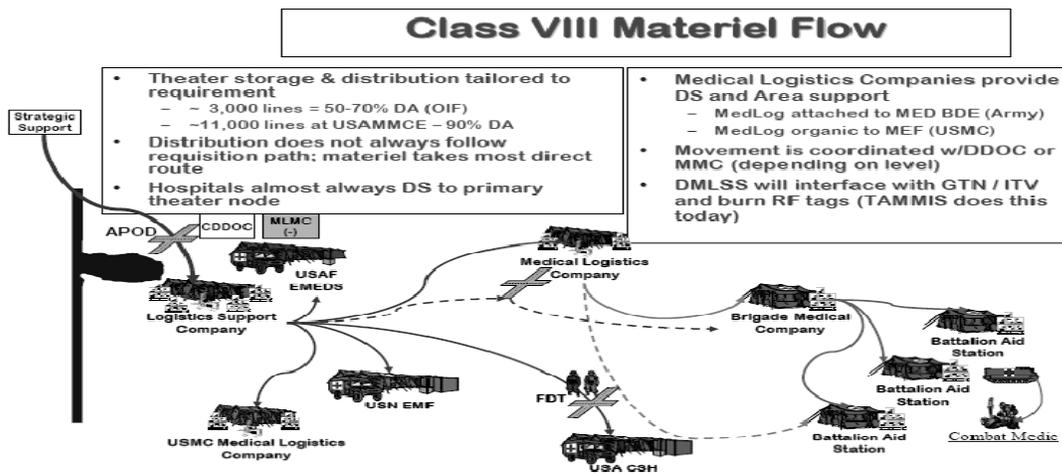
5-6 Deployed Environment

In the deployed environment the Brigade Physical Therapist may be operating from an established clinic or working from the tailgate of a truck with a pack full of basic supplies. The BCT Physical Therapy Section must be equipped with the knowledge, skills, and abilities to succeed in either situation and exhibit flexibility and creativity to do the most good for the BCT Soldiers. Resources within the brigade support battalion may include the Repair & Utility (R&U) team for fabrication and modification of facilities, S4, and Class IV equipment.

5-7 Physical Therapy Medical Equipment Set (MES)

The Army has established a MES for Physical Therapists in the deployed environment (appendix F). This MES is entitled “Physical Therapy Initial Entry BCT UA 6412”. This equipment set is intended to support initial entry operations into the theater of operations and not for sustainment operation in an established theater. Commanders should expect to augment this kit upon establishment of a mature theater and sustainment operations by way of MEDLOG requests. In the established theater unit physical therapists may fall in on pre existing clinics rather than establishing new facilities.

5-8 Garrison supply operations



For therapists working in a facility managed by the local Medical Treatment Facility (MTF), Class VIII supply requests are processed through the MTF at the expense of the MTF budget. Brigades that establish an independent physical therapy clinic in a brigade facility will process requests for medical supply through the brigade medical supply office (BMSO) to the MEDLOG warehouse that is usually collocated at the MTF in garrison. Doctrinally, the BMSO is a 4-7 person office with an officer (70K00), an NCO and several soldiers (E1-E4) and is responsible for the processing of medical supply requests between the level II user and the Medical Logistics Company of the Multifunctional Medical Battalion. A physical therapy clinic established in the brigade area will require the establishment of a supply budget appropriate to the setting based on square footage or on throughput.

5-9 Theater supply operations

The Theater Lead Agent for Medical Material (TLAMM) is the joint agency that manages medical logistics within the theater of operations for all branches of service. TLAMM is indicated as the logistics support Company in the diagram above. For example in Operation Iraqi Freedom/Operation Enduring Freedom (OIF/OEF) the US Army Central Command (CENTCOM) TLAMM was located in Qatar and it maintained a large warehousing capability of thousands of lines. TLAMM interfaces with the production and distribution capabilities of the Continental United States by coordinating with vendors and suppliers and then distributing the supplies to the requesting user by way of the Medical Logistics Company that supports an area of operations. During OIF/OEF a Medical Logistics Company was located in both Iraq and Afghanistan. The Medical Logistics Company maintains a warehousing capability of up to 3000 lines and can fill requisitions from its stocked items readily and restocks its shelves with items received through TLAMM.

The Brigade Medical Supply Officer (BMSO) manages Class VIII (medical supply) requests by electronic requisitions processed through the area Medical Logistics Company. The BMSO then coordinates distribution of the supplies with transportation assets integral to the brigade and area support units. In the deployed setting warehousing medical materiel is generally limited to emergency resupply at the Brigade level. The BMSO is authorized to maintain “informal” warehousing of a limited number of lines to support operational needs. The physical therapist must establish short lists (10-15 items) that are used at a rate that would require ready resupply directly from brigade in order to maintain operations.

The BMSO is assigned to the Brigade Support Battalion and typically conducts operations in close proximity to the Troop Medical Clinic (TMC). It is essential that the BCT physical therapy service establish a professional working relationship with the BMSO and communicate clearly their Class VIII needs. The BMSO will need the physical therapists assistance in selecting the correct items from the MEDLOG catalogs. It is essential that requests are specific as possible.

5-10 Processing Requests

Requesting an item that has an established National Stock Number and is in the TLAMM catalog is a simple process. The requisition of an item that is not listed in the TLAMM catalog will most likely take longer to fill. This process is not impossible, but requires persistence and the BMSO’s assistance.

a. Items in the TLAMM catalog

The TLAMM catalog is the listing that is searchable through the BMSO’s requisitioning system (DCAM). The physical therapist or their representative brings a request for a Class VIII item to the BMSO. Optimally the requisition includes the National Stock Number (NSN), a lengthy description of the item (nomenclature) and a cost. This helps the BMSO staff in finding the item on the DCAM system. Detail is important when searching DCAM as there are many options available. For example, searching a general term like “knee brace” results in an inability to differentiate one from

another unless the therapist works from a list of known NSNs such as the Critical Expendable Items list (Appendix G).

Once the item is found on DCAM and selected, the request is transmitted to the Medical Logistics Company. If the item is in stock at that location, it is pulled from the shelf and the order is filled within a couple of days. If the item is not stocked at the Medical Logistics Company the request is forwarded to TLAMM. If the item is stocked at that location it is filled and sent back to the requestor through the Medical Logistics Company and BMSO to the user. Requests for items that are in the TLAMM catalog that are not stocked on their shelves are forwarded to the area Prime Vendor for acquisition and distributed back to TLAMM and then to the user by the previously described system.

NOTE: It is important to understand that vendors provide items based on the nomenclature that describes an item. NSNs are assigned to a nomenclature and **NOT** to a particular manufacturer's product. This allows the vendor to fill a requisition by purchasing items from the least expensive supplier. This process is allowed as long as intent of the nomenclature is met. For this reason it is possible to receive a similar item from another manufacturer on subsequent requisitions using the same NSN. Report unacceptable substitutions to the BMSO. The BMSO can file a Report of Discrepancy (ROD) through DCAM that officially informs the vendor that the item will not be accepted in the future.

b. Items Not in the TLAMM catalog

The process of requesting a Class VIII item not listed in the TLAMM catalog begins with a Non Standard Requisition created by the BMSO in DCAM based on detailed information provided by the Physical Therapy personnel. The successful processing of this requisition requires the requestor to provide a letter of justification to the BMSO. The Medical Company Commander and Brigade Surgeon must approve the letter of justification. These documents will be forwarded electronically from the BMSO to the Medical Logistics Company and to TLAMM where it can be added to the TLAMM catalog and acquired through the prime vendor system. This process may take weeks to accomplish. The Brigade Surgeon's support and approval is instrumental to the successful execution of this process. These requests do not require Brigade Support Battalion or Brigade Commander's approval when processed through the MEDLOG channels.

5-11 Supply system optimization

There are a number of things that the brigade physical therapist can do to optimize the medical logistics system. First, it is important to understand that the medical logistics system is driven by volume. The customers that request the highest volume of items get the items they want stocked on the shelves at each echelon and never wait long for delivery. Physical Therapy specific expendable items will never reach the volume thresholds unless all therapists in theater ordering a particular item are using the same NSN. For example, there may be 20 NSNs associated with variations on the nomenclature "large ankle brace". If each therapist uses a different NSN then the volume of demand for each is below the threshold for stocking at the warehouse and the delivery time is lengthened as TLAMM acquires the brace from the vendor in CONUS to fill each

request. If all therapists in theater order large ankle braces using the same NSN then the volume of use drives the need to stock the item on warehouse shelves and delivery time is significantly reduced. This is what led to the development of the Physical Therapy Critical Expendable Items List (Appendix G). Whenever possible, deployed Physical Therapists should select items from this list to fill their Class VIII needs. Items not on this list get requested through DCAM with the understanding that the delivery time will be lengthened.

Another way to optimize the supply system at the brigade level is the establishment of the Authorized Stockage List (ASL) at the BMSO. The BMSO has an “informal” warehousing capability that is doctrinally for emergency resupply. The BCT physical therapy service should establish 10-15 lines of Class VIII items that the BMSO will stock as part of this ASL. These include items expended at the greatest rate and items that if unavailable would have the greatest impact on operations. Establishment of an ASL allows the BMSO to fill it quickly and then automatically reorder to refill the shelves in the BMSO warehouse.

5-12 Medical Maintenance

The Brigade Medical Maintenance NCO assigned to the Medical Company of the Brigade Support Battalion maintains the equipment essential to conducting Physical Therapy operations in garrison and Theater. The Med Maintenance NCO is only authorized to maintain items that are on the property book. Therefore, all Non Expendable items acquired through the Class VIII channels must be added to the property book. Items that cannot be repaired at the Brigade level will be turned in to the Medical Logistics Company of the Multifunctional Medical Battalion for repair. Standard items may be exchanged for a “float” if one is available.

APPENDIX A

References & Abbreviations

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Abbreviations

AHLTA- Armed Forces Health Longitudinal Technology Application

APFT- Army Physical Fitness Test

AO- Area of Operation

AWCP- Army Weight Control Program

AMEDDC&S- Army Medical Department Center & School

ASL- Authorized Stockage List

BAR- Brigade Injury Analysis Report

BCT- Brigade Combat Team BDE- Brigade

BMSO- Brigade Medical Supply Officer CDR- Commander

CENTCOM- Central Command

CHCS- Composite Healthcare System

CHPPM- Center for Health Promotion and Preventative Medicine

CONUS- Continental United States

CSCS- Certified Strength and Conditioning Specialist

DA-Department of the Army

DCAM- Defense Medical Logistics Customer Assistance Module

DIV- Division

FY- Fiscal Year

FMS- Functional Movement Screen

HHC- Headquarters Headquarters Company

HRC- Human Resource Command

HPO- Human Performance Optimization

IM- Information Management

IP- Injury Prevention

JMEWS- Joint Medical Evaluation Work Station

JPTA- Joint Patient Tracking Application

MC4- Medical Communication for Combat Casualty Care

MEDCOM-U.S. Army Medical Command

MEDLOG- Medical Logistics

MDS – Minimal Data Set

MES- Medical Equipment Set

MTF- Military Treatment Facility

MWR- Morale, Welfare and Recreation

NCO- Non-Commission Officer

NSN- National Stock Number

OEF- Operation Enduring Freedom

OIF- Operation Iraqi Freedom

OT- Occupational Therapist

PA- Physician Assistant

PHA- Physical Health Assessment

PHA- Periodic Health Assessment

PT- Physical Therapist

PROFIS- Profession Officer Filler Information System

R&U- Repair and Utility

ROD- Report of Discrepancy

RMC- Regional Medical Command

TDA- Table of Distribution and Allowances

TLAMM- Theater Lead Agent for Medical Material

TMC- Troop Medical Clinic

TMDS- Medical Data Store

TCMC- Tactical Combat Medical Course

TOE- Table of Organization and Equipment

USASOC- United States Special Operations Command

USARIEM- United States Army Research Institute of Environmental Medicine

USUSH- Uniformed Services University of Health Sciences

XO- Executive Officer

Appendix B

Theatre Movement

Depending on the mission of the BCT, it may be necessary for the physical therapist to move throughout the area of operations (AO) in order to provide effective services to the BCT. The BDE Surgeon (with the input of the BDE Medical Planner and the BDE physical therapist) is responsible for planning where and when services will be provided throughout the BCT. The concept of moving a medical provider to a location where multiple patients can be seen is not unique to the BDE physical therapist. Dentists, Mental Health Providers and Preventive Medicine Officers all typically circulate throughout the battle space. This allows for maximum dispersion of medical assets in the BDE AO, without having to move a significant number of Soldiers who typically have ongoing METL and defensive postures that must be maintained.

The following are examples of decision points that may be utilized to determine the need to move the brigade physical therapist throughout the AO.

- How many outlying bases does the BCT occupy; what is the population at those bases that would be serviced
- What is the transportation method of Soldiers within the BCT to get to the location of the BDE physical therapist in order to obtain services
- What is the security of the transportation method (ground, air)
- What is the potential impact on unit readiness if the BDE physical therapist does/ does not visit outlying bases
- What equipment / additional personnel (i.e. 68WN9) must be moved along with the BDE physical therapist

Air Movement

Air movement throughout the AO can be an effective method and in some instances may be the only transportation method available. Air movement is typically coordinated through the Brigade S-3 / Air cell. This cell coordinates all the air assets that are available to the BCT, prioritizing mission requirements with aircraft availability. Depending upon the task organization of the BCT, there may be additional units that are supporting the BCT that have air asset availability. The S-3/ Air cell is the point of contact for coordinating movement of personnel via aircraft and will provide instruction on the requirements for manifesting for flights.

When moving to or from the flight landing zone (LZ), there will be an Arrival and Departure Air Control Group (ADACG) that controls final manifesting of personnel onto flights as well as accepting inbound personnel. The ADACG will have the most recent information on flight times, movements and availability. When planning for movement on aircraft there are two key factors that the BCT physical therapist must account for: weather and load.

Weather

Aircraft movements are very susceptible to weather fluctuations. As such flights are routinely delayed or cancelled with little to no notice. When attempting to disseminate throughout the AO, the BDE PT may or may not have a schedule that can support inconsistencies associated with flying. Significant time can be spent staging for flights at the ADACG and this should be accounted for when planning.

Load

The number of personnel and the amount of equipment that can be moved in a single flight is limited to the type of aircraft. Proper planning or pre staging of equipment at outlying locations can limit the amount of equipment that must be loaded on and off the aircraft. It should be noted that some LZs may be in austere locations or located many kilometers from the ADACG. Large loads may be difficult to move or impractical to load on and off aircraft.

Ground Movement

Movement by ground can be done by multiple methods. One of the more efficient methods is to coordinate with the Brigade Support Battalion (BSB). The BSB is responsible for providing logistical support throughout the BCT, and if there are outlying units they will be the main effort for providing resupply of all classes of materials. Resupply is routinely done through Combat Logistic Patrols (CLPs). The Support Operations Officer (SPO) is a BSB staff officer and is the individual who manages the sustainment operations and establishes mode and frequency of resupply. By coordinating for transportation with the BSB, the BDE PT does not utilize additional assets to accomplish the mission. When coordinating for ground transportation, the BDE PT must be familiar with the SOPs of the BSB to include; call sign and frequency, uniform and weapon posture, Rules of Engagement (ROE) and battle drills for reacting to enemy forces.

It should be noted that it may be necessary for the BDE physical therapist to take an active role during the CLP by:

- providing medical support

- serving as Truck Commander (TC)
- monitoring radio communications for the vehicle
- operating weapons systems or counter weapons systems
- driving the vehicle

This may require significant action by the BDE physical therapist before / during deployments to be mission capable. The BDE physical therapist should review the SOPs of the BSB and coordinate for training or licensing in garrison to support the mission. In addition, the BDE physical therapist should be properly equipped with a combat life saver/ aid bag in order to render proper medical care should it be necessary.

Appendix C-Brigade Combat Team (BCT) Minimal Data Set (Page 1 of 4)

Question Answered	Metric	Required	Method	Collected
What % of physical therapy (PT) BCT pnts are new evaluations, follow-ups, or treatments? (Workload)	# New PT Evaluations/Total PT Visits # Follow-ups/Total PT Visits # Treatments/Total PT visits	Required	Local/EMR	Daily
What % of the PT BCT workload is direct access care?	# New Patients Seen on Direct Access/ Total #New Patients	Required	Local	Daily
What is the general mechanism of injury?	Mechanism of Injury	Required	Local/EMR	Daily
What is the body region associated with each injury?	Body region	Required	Local	Daily
What % of soldiers seen by BCT PT require consultation/management outside of PT?	# Soldiers Requiring MTF Consult(garrison) / Total # of New Appointments by PT BCT	Required	Local	Daily
What % of soldiers seen for a new evaluation would be ultimately non-deployable if they had to deploy in the upcoming quarter?	# Soldiers Non-Mission Capable-Initial Evaluation/ Total PT New Evaluations	Required	Local	Daily
What % of the total BCT workload is being managed by physical therapy?	Total PT Patient Load/ Total # Patients Seen by BCT Providers	Required	Local	Monthly
What is the total and types of injuries managed by the BCT PT service?	Diagnosis (ICD-9) / # New Evaluations	Required	Local/EMR	Quarterly
What is the total # of musculoskeletal injuries in the BCT?	# Musculoskeletal injuries in BCT/ Number of Soldiers in BCT	Required	Local/EMR	Quarterly
What is the % of BCT Soldiers with musculoskeletal injuries that are managed by the BCT PT service	# of New Evaluations/ # Musculoskeletal injuries in BCT	Required	Local/EMR	Quarterly
Ability to answer the above questions specific to each unit	Unit (Company)	Required	Local/EMR	Quarterly
What time(\$ saved) by providing PT services in the BCT setting?	# BCT Soldiers Rx by PT X time or cost of having Soldier transferred to MTF services	Suggested	Local	Monthly
What is the cost per pnt for BCT PT vs other BCT and MTF Providers?	Cost per provider(based on # imaging studies, medications orders)	Suggested	Local	Monthly
What % of profiles limit physical training/sports versus occupational duties?	Physical training/sports versus MOS limitations	Suggested	Local	Monthly
What is the average length of profiles?	Average number of profile days	Suggested	Local	Monthly
What number # of MEDEVACS prevented by having BCT PT service?	Number of MEDEVACS prevented	Suggested	Local	Daily
Health outcomes data	e.g. Oswestry Disability Index, Neck Disability Index, and Lower Extremity Functional Scale	Suggested	Local	Daily

Note: 1) Please see the tables below for specific details on each metric 2) Please see Proponency Office for Rehabilitation and Reintegration website: <http://www.amedd.army.mil/prr/brigade.html> for supplemental excel spreadsheet for required and recommended data sets. EMR=Electronic Medical Record. Green Highlight: Information collected daily by PT BCT service; Purple Highlight: Requires monthly liaison to determine total number of healthcare visits for Brigade; Blue Highlight: Requires liaison with Medical Treatment Facility(MTF) administration.

Brigade Combat Team (BCT) Minimal Data Set (Page 2 of 4)

Clinical Care Question Answered	Metric	Data Collection Method	
		EMR	Local
What % of physical therapy (PT) BCT pnt visits are new evaluations?	# New PT Evaluations/Total PT Visits	X	X
What % of PT BCT pnt visits are follow-ups?	# Follow-ups/Total PT Visits	X	X
What % of PT BCT pnt visits are treatments?	# Treatments/Total PT visits	X	X
<ul style="list-style-type: none"> Data used internally and externally (SP Corp Office, AMEDD C&S, and OTSG) for validation of work load and support of role in the BCT. There continues to be a perception that although the physical therapy workload is high; that the count is artificially inflated secondary to multiple in-clinic treatments. Being able to demonstrate the percentage of new, follow-up, and treatment visits will help address this perception (i.e., 70% of the appointments last month were new evaluations, 20% were follow-up visits, and 10% were in-clinic treatments). When you are a single therapist, without support staff, differentiating between follow-up appointments and treatments can be difficult; if the treatment program was altered, exercises progressed, additional education provided, or goals were altered consider the appointment a follow-up LOCAL: Each patient will be counted in either the new, follow-up, or treatment columns of the Excel spreadsheet. Electronic medical record (EMR): Information can be obtained from a local CHCS query at the clinic, provider level, or central M2 query only if the encounter is completed in an EMR. 			
What % of the PT BCT workload is direct access care?	# New Patients Seen on Direct Access/ Total #New Patients		X
What % of the total BCT workload is being managed by physical therapy?	Total PT Patient Load/ Total # Patients Seen by BCT MTF		X
<ul style="list-style-type: none"> Direct Access: Data used externally to support physical therapy's role as primary neuromusculoskeletal providers. Data used internally and externally (SP Corp Office, AMEDD C&S, and OTSG) for validation of work load and support of role in the BCT. Daily: You will annotate each NEW visit that was direct access; not previously seen by a credentialed healthcare provider Monthly: Determining the total number of patients seen by your BCT MTF provides the denominator; so you can compare PT workload to the rest of the MTF. The total number of patients seen by your BCT MTF should only include patient encounters; it should not include labs, radiographs, pharmacy refills, immunizations. Only encounters with a credentialed healthcare provider. Total BCT MTF workload will need to be obtained through a medical clerk that captures workload data for the MTF. LOCAL: Direct access will be counted for each new patient that previously has not seen a credentialed healthcare provider prior to your visit <p>OTHER SUGGETED RELATED METRICS:</p> <ul style="list-style-type: none"> LOCAL: In your Excel spreadsheet you will enter average time a Soldier is away from work when they visit your clinic and the average time a Soldier will be away from work if they had to go to the MTF for treatment. Based on the number of Soldiers you were able to evaluate (new evaluations), the Excel sheet will automatically calculate the cost savings (time saved). EMR: With the aid of EMR, you could collect the # of Soldiers seen for musculoskeletal injuries by BCT PT versus other MTF providers. Cost of care per patient for BCT PT versus other MTF Providers can be assessed .Note: If BCT PT is providing more direct access care cost may actually be higher for PT working in the BCT setting. 			

Brigade Combat Team (BCT) Minimal Data Set (Page 3 of 4)

Clinical Care Question Answered	Metric	Data Collection Method	
		EMR	Local
What is the general mechanism of injury	Mechanism of Injury	X	X
What is the body region associated with each injury	Body region	X	X
What is the total and types of injuries managed by the BCT PT service	Diagnosis (ICD-9)/ # New Evaluations	X	X
What is the total # of musculoskeletal injuries in the BCT	# Musculoskeletal injuries in BCT/ # Soldiers in BCT	X	X
What is the % of BCT Soldiers with musculoskeletal injuries that are managed by the BCT PT service	# of New Evaluations/ # Musculoskeletal injuries in BCT	X	X
<ul style="list-style-type: none"> • Data used internally and externally (SP Corp Office, AMEDD C&S, and OTSG) for validation of work load and support of role in the BCT. • Data used for injury surveillance (commander reports, injury rates between units and BCTs, and extent of musculoskeletal injuries in the Army) • As this is “incidence” data, it is only collected on <u>new evaluations</u>. In EMR it is very important that all of your providers in your MTF use the DNBI codes appropriately. Code “40” should be used for all follow-up, treatment, and administrative appointments. Every non-40 code is calculated as a new incident/injury. Therefore, if you are practicing in a non-direct access setting; all of your DNBI codes should be a 40. • Mechanism of injury: <ul style="list-style-type: none"> ○ <u>Injury, Work/Training</u>: any injury occurring as a direct consequence of military operations/duties or of an activity carried out as part of formal military training, to include organized runs and physical fitness programs, this category will be divided into 3 sub-categories: <ul style="list-style-type: none"> ▪ Physical Training ▪ Work/MOS ▪ Load carriage- Injuries while under load (ruck/assault pack, etc) ○ <u>Injury, Other</u> – Any injury not included in the previously defined injury categories (insidious, pre-existing, overuse) ○ <u>Injury Recreational/Sports</u>: Any injury occurring as a direct consequence of the pursuit of personal and/or group fitness, excluding formal training (unit physical training) ○ <u>Injury, Motor Vehicle Accidents</u>: Any injury occurring as a direct consequence of a motor vehicle accident ○ <u>Combat Injuries</u>: While deployed, annotate which injuries resulted from combat • Additional mechanism of injuries can be tracked (e.g. insidious, pre-existing, overuse, type of sport, uneven terrain) This additional information is strongly recommended as it provides detailed information to unit leaders; but may vary between BCT, garrison/deployed setting, and mission. The maximum data set excel sheet provides a list of pre-approved terminology. • Although the ICD-9 code will provide more specific information, access to that data may be limited (i.e., data pull typically every 90 days). To help inform your command the general areas of injury, body region can be easily collected for all new evaluations. • As a patient may have injuries in more than 1 body region, it is likely that the count for body regions will be greater than the counts for new evaluations. • It is important to realize that not all patients with a musculoskeletal injury in your unit will be seen by PT. Therefore, analysis of the number of injuries within the BCT will require analysis by AHTLA and updated UIC codes in DEERS • LOCAL: Each new patient should have a mechanism of injury and each body region associated with the visit annotated. Locally will need to find out the number of Soldiers in each unit for the denominator. • EMR: Note: only if the encounter is completed in an EMR. <ul style="list-style-type: none"> ○ Quarterly data pulls ○ Need to ensure Soldiers UIC code is accurate in EMR ○ MOI is tracked using DNBI codes (19-Injury MVA, 20-Injury Work/Training, 21-Injury Rec/Sport, 23-Injury Other) ○ ICD-9 codes will be searched in lieu of body regions, pulled for the PT Clinic and all other areas of the MTF; ○ Cost calculations can be generated from EMR data based on # of appointments appointment types, imaging, consultations, prescriptions, and other special tests. 			
Ability to answer the above questions specific to each unit	Unit	X	X
<ul style="list-style-type: none"> • EMR: Tracking injuries to specific company level units could be a challenge without the assistance of EMR. However, the ability to influence injury requires information at the company level to be able to influence training, unit physical fitness, or other activities that are leading to musculoskeletal injuries. Having the ability to track injuries quarterly from the EMR and put that data in a graphical format over time for each company will be helpful in identifying trends that would be lost if the data was only collected at the Brigade or Battalion level. 			

Brigade Combat Team (BCT) Minimal Data Set (Page 4 of 4)

Clinical Care Question Answered	Metric	Data Collection Method	
		EMR	Local
What % of soldiers seen by BCT PT require consultation/management outside of PT?	# Soldiers Requiring MTF Consult/ Total # of New Appointments by PT BCT		X
What % of soldiers seen for a new evaluation would be ultimately non-deployable if they had to deploy in the upcoming quarter?	# Soldiers Non-Mission Capable-Initial Evaluation/ Total PT New Evaluations		X
<ul style="list-style-type: none"> • # Consults outside of PT would include Medical treatment facility (MTF) referrals or triage (deployment) for such specialty services (e.g. orthopaedics, neurology), but does not include imaging studies. Historically, these questions have been very helpful to answer time-saved related questions. For example, if a Soldier can see you in the BCT and only miss 30 minutes of work, but would miss 2 hours if seen at the hospital, a cost savings could be calculated. Additionally, this data would allow you and your command to appreciate the percentage of the musculoskeletal injury workload that you were managing independently. Finally, it provides an indirect analysis of the severity of the injuries. • After each new evaluation, you will estimate if the Soldier would be non-deployable with that injury if they were going to deploy in the upcoming quarter. This is an estimate based on their injury, their MOS and assigned duties, and your ability to manage that patient in both a garrison and a deployed setting. This will provide your BDE CDR an estimate of those seeking PT that might be injured that would be non-deployable with that injury based on you being part of the BCT. This metric was chosen in lieu of monitoring profile data based on some of the limitations discussed below. • LOCAL: Each consultation or Soldier viewed to be deployable will be annotated on the Excel data sheet during their new evaluation visit. <p>OTHER SUGGESTED RELATED METRICS:</p> <ul style="list-style-type: none"> • LOCAL: <ul style="list-style-type: none"> ○ Health Assessment Outcome Indicators: It is strongly recommended that outcome measures are used to track your patients. Outcome measures such as the Oswestry Disability Index, Neck Disability Index, and Lower Extremity Functional Scale should be considered to help you track individual outcomes. If you decide to track outcomes you will need to use an outcome excel database that differs from the PT BCT excel spreadsheet. ○ Profiles: Although profile data can be collected by your admin clerks and the BN S1, profile data is challenging to track accurately and meaningfully. If you track just the profiles from your clinic; that only provides a snapshot of profiles across the Brigade. Profiles that are not reported to the company's administrative clerk or BN S1 are by definition not tracked. Additionally, profile data can be skewed based on the mission (need to keep a Soldier off a convoy) and the provider's bias. In Garrison this is less of an issue. If profiles are of interest to your BCT CDR, then a systematic collection process across the Brigade will be required. Consider the following broad categories: convalescent leave, quarters < 72 hours, limited duty profile < 48 hours, > 48 hours but < 1 week, > 1 week but < 1 month, > 1 month but < 3 months, and permanent profiles. Tracking this data will also help define those in the unit that are deployable. Due to the difficulty in collecting profile data and the limited meaning of partially collected profile data; this data is not required at this time. However, the Musculoskeletal Action Plan is working on EMR related tools to help track profiles more systematically ○ MEDEVACS: In a deployed setting tracking Soldiers requiring MEDEVAC for musculoskeletal injury is important. Attempts to assess how many MEDEVACs were prevented remains difficult because it is a subjective assessment; but if you work closely with your medical staff and clearly define this metric then this is a powerful statistic. MEDEVAC prevention is operationally defined as an injury that would have been evacuated to the next level of care if the BCT PT was not present. Due to difficulty in defining this variable it is a recommended but not required metric. Actual MEDEVACs can be pulled through the TRACES database. 			

Appendix D

Injury Prevention Screening Measures

Functional Movement Screen

The Functional Movement Screen (FMS) is a comprehensive exam that assesses quality of fundamental movement patterns to identify an individual's limitations or asymmetries.^{1,2} The FMS includes a series of 7 dynamic flexibility tests designed to categorize functional movement patterns. The exam requires muscle strength, flexibility, range of motion, coordination, balance, and proprioception. It is scored on an ordinal scale from 0-3. The scores from the 7 movement patterns are summed and a composite score is obtained. The relationship between FMS score and injury risk has been explored in a retrospective study. The results of this study suggest National Football League (NFL) players scoring ≤ 14 on the FMS have a significantly greater chance of injury across a competitive season. Logistic regression indicated that players with an FMS score ≤ 14 were approximately 11 times more likely to be injured and players with an asymmetry were 3 times more likely to be injured ($p < 0.05$). There was no significant relationship with rookie/veteran status.³ The reliability of the FMS has been reported to be moderate to excellent.³ In pilot testing in our research laboratory, 131 U.S. Air Force Elite Pararescue Trainees were assessed on the FMS. Our results confirm that those ≤ 14 were less likely to succeed with initial training secondary to musculoskeletal injury.

Additional details on the functional movement screen are located at the functional movement website: <http://www.functionalmovement.com/SITE/functionalmovementscreen/whatisfms.php>. (Note: access to some areas of this website may be limited). Additionally, please check the Proponency Office for Rehabilitation and Reintegration website for periodic updates for injury prevention screening items: (<http://www.amedd.army.mil/prr/brigade.html>)

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2. Cook, G., L. Burton, and B. Hogenboom, *The use of fundamental movements as an assessment of function-Part 1*. NAJSPT, 2006. **1**(2): p. 62-72.
3. Kiesel, K., P.J. Plisky, and M. Voight, *Can serious injury in professional football be predicted by a preseason Functional Movement Screen?* North Am J Sports Phys Ther, 2007. **2**(3): p. 76-81.

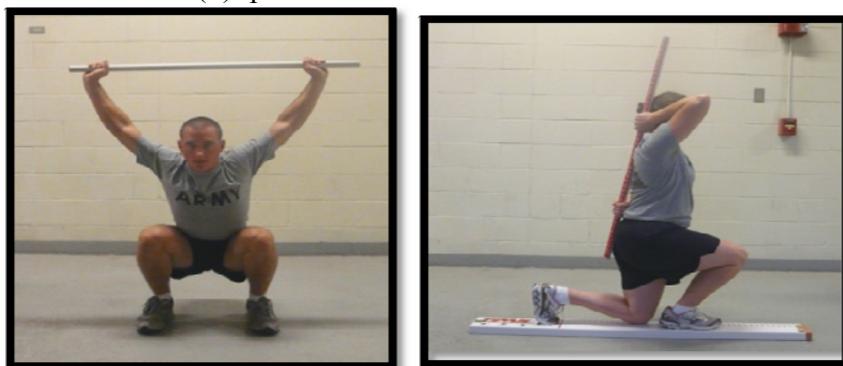


Figure: Examples of 2 of the 7 Functional Movement Screen Tests

Y Balance Screen

Balance

The Star Excursion Balance Test (SEBT)/Y Balance Test (YBT) are dynamic tests performed in single leg stance that require strength, flexibility, and proprioception. They have been used to assess physical performance, identify chronic ankle instability, identify athletes at greater risk for lower extremity injury, and researchers have suggested including these tests in screening for sport participation.¹⁻⁵ Specifically, those with asymmetrical movement were 2.7× more likely to suffer a lower extremity injury and those with a decreased forward reach were 2.6× more likely to suffer a lower extremity injury. Researchers have also shown that performance improves with training,^{3,6} and have suggested using these tests as a post-rehabilitation test to insure dynamic functional symmetry.⁴ The goal of these tests are



Figure : Y-Balance Test (YBT)

to maintain single leg stance on a leg while reaching as far as possible with the contralateral leg.⁷ The maximal distance reached after 3 trials in each direction is normalized to limb length. The original SEBT incorporated reaching in 8 directions while standing on each foot, but factor analysis,⁸ and factors that were directly able to predict injury resulted in the consolidation of the SEBT into the YBT.¹ The YBT incorporates 3 movement directions (anterior, posteromedial, and posterolateral) Reliability of the YBT has been shown to have good intrarater reliability (ICC: 0.85 to 0.91) and good interrater reliability (ICC: 0.99 to 1.00).⁹ Prior to being assessed on the Y Balance test, subjects will view an instructional video and be provided 6 practice trials to minimize the influence of a learning effect.¹ Subjects will stand on the center foot plate with the distal aspect of the foot at the starting line. While maintaining single leg stance, the subject will be asked to reach with the free limb in the anterior, posteromedial, and posterolateral directions in relation to the stance foot by pushing the indicator box as far as possible. Three trials in each direction for each foot will be collected and the maximal reach in each direction will be included for analysis. To normalize reach length based subject's limb length, lower limb length (anterior superior iliac spine to the most distal portion of the medial malleolus) will be calculated. Composite reach distance and asymmetry values will be calculated.^{1,8}

Additional details for conducting the Y-balance test are located at www.ybalancetest.com. Additionally, please check the Proponency Office for Rehabilitation and Reintegration website (<http://www.amedd.army.mil/prr/brigade.html>) for periodic updates for injury prevention screening items.

References Y-Balance

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2. Olmsted LC, Carcia CR, Hertel J, Shultz SJ. Efficacy of the Star Excursion Balance Tests in Detecting Reach Deficits in Subjects With Chronic Ankle Instability. *J Athl Train.* Dec 2002;37(4):501-506.
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Appendix E

Human Performance Optimization Assessment Measure

Physical Performance Metrics (Minimal Set)

1. Push ups¹ (APFT) (UE Push strength)
2. Sit ups¹ (APFT) (Abdominal/hip flexor strength)
3. 2-mile run¹ (APFT) (endurance)
4. Illinois Agility Test^{2,3} (mobility)
5. Medicine Ball Put^{4,5} (strength)
6. Vertical Leap⁶⁻⁸ (mobility)
7. 40 Yard Dash^{9,10} (mobility)
8. Pull ups^{11,12}/Flexed Arm Hang^{13,14} (UE Pull strength/endurance)

The group of measures above were selected to provide a method of measuring changes in Soldiers' performance levels. The goal is to measure mobility, strength, and endurance in the entire body. Performance measures can be used to assess change over time in your Soldiers. In order to do this you must test them at a minimum at the initiation of a training program or cycle and at the end. Below are instructions on how to execute each event. The push-ups, sit-ups, and two mile run are conducted and scored according to FM 21-20 Army Physical Fitness Test (APFT) standards. It is recommended that APFT events are conducted on a separate testing day in order to reduce the impact of fatigue on performance for the Illinois agility test, medicine ball put, vertical leap, pull-ups/Flexed arm hang, and 40 yard dash. Remember that your Soldiers should not conduct these tests cold. The Soldiers should jog half a mile (5 minutes if no half mile track or route is available) in order to warm up. The remaining events can be conducted in rotating stations, for example 10 Soldiers start at each station and rotate to the back of the line of the next station after completing their current event, this will also allow for a rest. There will be an order effect from testing in this fashion so it is important to ensure that Soldiers perform the events in the same order during the pre and post-test. The Illinois Agility Test and the 40 Yard Dash should not be next to each other in the rotation as both are sprinting events.

Push-Up

The push-up event measures the endurance of the chest, shoulder, and triceps muscles. On the command "Get Set," assume the front-leaning rest position by placing your hands where they are comfortable for you. Your feet may be together or up to 12 inches apart. When viewed from the side, your body should form a generally straight line from your shoulders to your ankles (see figure 1). On the command "Go," begin the push-up by bending your elbows and lowering your entire body as a single unit until your upper arms are at least parallel to the ground. Then return to the starting position by raising your entire body until your arms are fully extended. Your body must remain rigid in a generally straight line and move as a unit while performing each repetition. At the end of each repetition, the scorer will state the number of repetitions you have completed correctly. If you fail to keep your body generally straight, to lower your whole body until your upper arms are at least parallel to the ground, or to extend your arms completely, that repetition will not count, and the scorer will repeat the number of the last correctly performed repetition. If you fail to perform the first ten push-ups correctly, the scorer will tell you to go to

your knees and will explain to you what your mistakes are. You will then be sent to the end of the line to be retested. After the first 10 push-ups have been performed and counted, however, no restarts are allowed. The test will continue, and any incorrectly performed push-ups will not be counted. An altered, front-leaning rest position is the only authorized rest position. That is, you may sag in the middle or flex your back. When flexing your back, you may bend your knees, but not to such an extent that you are supporting most of your body weight with your legs. If this occurs, your performance will be terminated. You must return to, and pause in, the correct starting position before continuing. If you rest on the ground or raise either hand or foot from the ground, your performance will be terminated. You may reposition your hands and/or feet during the event as long as they remain in contact with the ground at all times. Correct performance is important. You will have two minutes in which to do as many push-ups as you can.

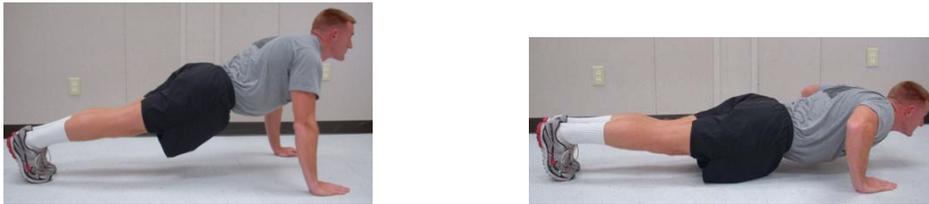


Figure 1. Proper form for the “Up” and “Down” position of the push-up.

Sit Up

The sit-up event measures the endurance of the abdominal and hip flexor muscles. On the command “get set,” assume the starting position by lying on your back with your knees bent at a 90 degree angle. Your feet may be together or up to 12 inches apart. Another person will hold your ankles with the hands only. No other method of bracing or holding the feet is authorized. The heel is the only part of your foot that must stay in contact with the ground. Your fingers must be interlocked behind your head and the backs of your hands must touch the ground. Your arms and elbows need not touch the ground. On the command “Go,” begin raising your upper body forward to, or beyond, the vertical position. The vertical position means that the base of your neck is above the base of your spine. After you have reached or surpassed the vertical position, lower your body until the bottom of your shoulder blades touch the ground. Your head, hands, arms, or elbows do not have to touch the ground. At the end of each repetition, the scorer will state the number of sit-ups you have correctly completed. A repetition will not count if you fail to reach vertical position, fail to keep your fingers interlocked behind your head, arch or bow your buttocks off the Ground to raise your upper body, or let your knees exceed a 90 degree angle. If a repetition does not count, the scorer will repeat the number of your last correctly performed sit-up. The up position is the only authorized rest position. If you stop and rest in the down (starting) position, the event will be terminated. As long as you make a continuous physical effort to sit up, the event will not be terminated. You may not use your hands or any other means to pull or push yourself up to the up (resting) position or to hold yourself in the rest position. If you do so, your performance in the event will be terminated. Correct performance is important. You will have two minutes to perform as many sit-ups as you can.



Figure 2. Proper form of the sit-up “Up” position and the sit-up “Down” position.

Two-Mile Run

The two-mile run is used to assess your aerobic fitness and your leg muscles’ endurance. You must complete the run without any physical help. At the start, all Soldiers will line up behind the starting line. On the command “Go,” the clock will start. You will begin running at your own pace. You are being tested on your ability to complete the 2-mile course in the shortest time possible. Although walking is authorized, it is strongly discouraged. If you are physically helped in any way (for example, pulled, pushed, picked up, and/or carried) or leave the designated running course for any reason, you will be disqualified. (It is legal to pace a Soldier during the 2-mile run. As long as there is no physical contact with the paced Soldier and it does not physically hinder other Soldiers taking the test, the practice of running ahead of, along side of, or behind the tested Soldier, while serving as a pacer is permitted. Cheering or calling out the elapsed time is also permitted.)

Illinois Agility Test

The Illinois Agility Test is a test of mobility. It is set up with four boundary cones, 10 meters long x 5 meters wide. An additional four cones are set up in the center of the testing area 3.3 meters apart (figure 4). Start the test lying face down behind and next to cone 1 (hands should be at shoulder level ready to push you up). On the command “Go,” the stopwatch is started. Get up as fast as possible and run around cone 2, around cone 3 weaving through cones 4-6 and back down weaving through cones 6-3. Finally, sprint from cone 3 around cone 7 and down across the finish line at cone 8. All of the sprinting is in the forward direction. It is important to remember to allow each Soldier an opportunity to walk through the cones as this is a complicated sprinting pattern. It is recommended that the Soldiers practice this event at morning physical training before the testing day.

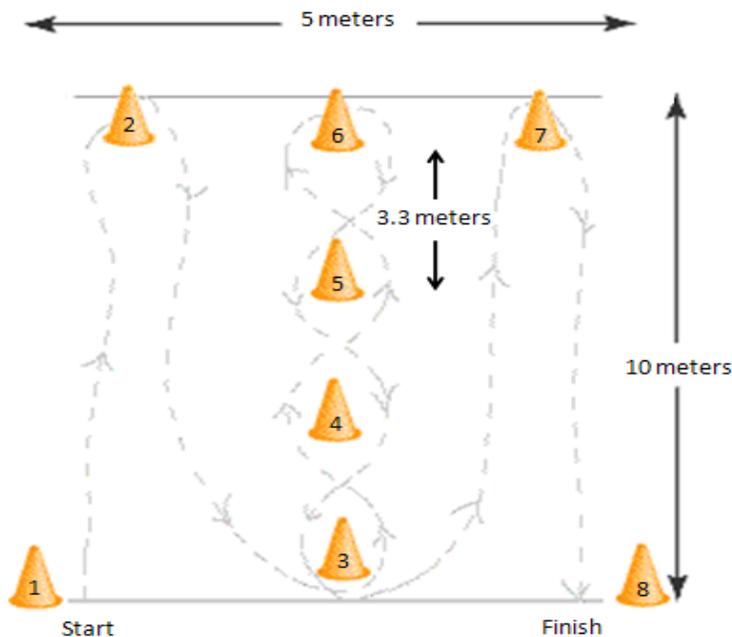


Figure 4. Set up and course path of the Illinois Agility Test.

Medicine Ball Put

The Medicine Ball Put is a test of upper body strength. This is a two handed upper body explosive power measure similar to a basketball chest pass. The Soldier sits in a chair placed against a wall. The Soldier sits with his or her back firmly against the chair back with his or her feet flat on the floor. A 2-kg medicine ball is held in both hands. The Soldier holds the ball touching his or her chest and pushes the medicine ball forward with as much power as possible. The final score is the furthest distance of three throws measured from the front leg of the chair to where the middle of the ball lands. It is easiest to secure a measuring tape on the ground before the Soldier throws.



Figure 5. Proper form for the ball throw. Note the measuring tape on the ground.

Vertical Leap

The Vertical Leap is a lower body mobility measure. The Soldier stands side on to a wall and reaches up with the hand closest to the wall. Keeping the feet flat on the ground, the point of the fingertips is marked with chalk. The athlete then steps slightly away from the wall, and jumps vertically as high as possible using both arms and legs to assist in projecting the body upwards. S/he attempts to touch the wall at the highest point of the jump. The difference in distance between the reach height and the jump height is the score. The best of three attempts is recorded.



Figure 6. Proper form for the vertical leap.

40 Yard Dash

The 40 yard dash is a mobility measure. This event is performed in a similar manner to that used by the NFL. The Soldier begins at the start line in a three point stance and on the command “Go” explodes into a straight sprint. The Soldier continues sprinting until he or she crosses the finish line. Time is recorded for the total 40 yards and Soldiers will complete 3 trials. The best time is recorded.

Pull Ups (Males)

The Pull Up is an upper body strength measure. The pull up bar should be high enough to allow the Soldier to hang freely. The Soldier may be assisted to the bar or jump. The Soldier must hang freely from the bar with his palms facing away from him and elbows completely extended before beginning the initial repetition. The momentum from jumping cannot be used to assist the Soldier with the repetition. The knees may be held straight or bent but may not be flexed past the waist. The Soldier then attempts to pull his body upwards towards the bar until his chin is above the bar. The Soldier must then lower himself to the start position ensuring that his elbows have extended completely. The grader will announce the number of correctly performed repetitions each time the Soldier correctly clears the bar. If the Soldier fails to extend his elbows completely, kicks his legs, kips, or fails to clear his chin over the bar, the repetition will not count. Resting is permitted in either the up or down position but the Soldier may not rest his chin on the bar. This event is terminated when the Soldier is no longer able to pull himself to the bar.



Figure 6. Proper form for the pull up. A safety should be used to spot the Soldier but should be sure not to touch him unless he is in danger of falling.

Flexed Arm Hang (Females)

The Flexed Arm Hang is an Upper Body endurance measure. The pull up bar should be high enough to allow the Soldier to hang freely. The Soldier is lifted or steps up into position with her elbows flexed and chin held above the bar. Palms should face away from her. Time is started when the support is removed and terminated when the chin touches or falls below the bar.



Figure 7. Proper form for flexed arm hang.

References Physical Performance Metrics

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Appendix F
Physical Therapy Medical Equipment Set

FSC	NIIN	Long Nomenclature	AAC	ARC	Un	Qty
6510	00-201-1755	BANDAGE MUSLIN COMPRESSED OLIVE DRAB37X37X52" TRIANG W/SFTY PINS	D	X	EA	1
6515	00-221-3316	SYRINGE HYPODERMIC GP 3CC CAP DOUBLE SCALE W/REGULAR LUER TIP100	L	X	PG	1
5110	00-289-8659	SHEARS METAL CUTTING HAND 8IN	G	D	EA	2
6515	00-338-9100	TUNING FORK C-128 PITCH DESIGNATOR WITH CLAMP	L	D	EA	1
6515	00-340-6700	HAMMER REFLEX TESTING TAYLOR LARGE 7-8" LG 0.75" THK TRIANGULAR	L	D	EA	1
6515	00-774-0000	CANE WALKING 36.5" LG WITHOUT TIP	L	X	EA	4
5110	00-892-5071	KNIFE CRAFTSMAN'S AL30 SHOP REMOVABLE BLADE 5.5IN O/A LG	G	X	EA	1
6515	01-013-3911	TIP CANE AND CRUTCH 0.75" DIAMETER 3" HIGH CORRUGATED RUBBER 12S	D	X	PG	8
6515	01-139-9099	SHEET SPLINT ORTHOPEDIC THERMOPLASTIC 36X24" PERFORATED DSGN 2S	L	X	PG	2
6515	01-140-5353	ELECTRODE PERIPHERAL NERVE STIMULATOR PREJELLED DISPOSABLE 30S	L	X	PG	1
6515	01-153-4863	SPLINT HAND COCKUP ALUMINUM COVER CANVAS GLOVE MEDIUM LEFT HAND	L	X	EA	6
6515	01-153-4864	SPLINT HAND COCKUP ALUMINUM COVER CANVAS GLOVE MEDIUM RIGHT HAND	L	X	EA	6
6515	01-153-4929	SUPPORT SHOULDER IMMOBILIZER MUSLIN MEDIUM	K	X	EA	2
6515	01-153-4930	SUPPORT SHOULDER IMMOBILIZER MUSLIN LARGE	K	X	EA	2
6515	01-153-5396	SPLINT HAND COCKUP RIGHT HAND LARGE 9" REMOVABLE SPOON	L	X	EA	6
6515	01-153-5398	SPLINT HAND COCKUP LEFT HAND LARGE 9" REMOVABLE SPOON	L	X	EA	6
6510	01-221-8997	BANDAGE CASTING RESIN IMPREGNATED FIBERGLASS 18X24IN 4S	L	X	PG	1
6515	01-230-9930	STIMULATOR TRANSCUTANEOUS NERVE 9V BATTERY W/CASE	L	D	EA	1
6515	01-240-8712	SUPPORT KNEE 24" LG THIGH SIZE 30" CALF SIZE 20" W/STRAPS FOAM	L	X	EA	3
6515	01-257-4672	SUPPORT ELBOW TENNIS UNIVERSAL SIZE ADJUSTABLE WRAP-AROUND	L	X	EA	4

Appendix F
Physical Therapy Medical Equipment Set (page 2 of 3)

FSC	NIIN	Long Nomenclature	AAC	ARC	Un	Qty
6515	01-271-0605	SUPPORT KNEE LARGE RUBBER LATEX FILLING WEBBING CTN COVER	L	X	EA	4
6515	01-280-1857	SUPPORT KNEE CHO-PAT STRAP MEDIUM 12.50-14.50" LG RUBBER/COTTON	L	X	EA	4
6510	01-321-7747	ADHESIVE TAPE SURGICAL BUFF 540X1.5 INCHES LEUKOTAPE P 12S	L	X	PG	1
6515	01-323-5418	ARCH SUPPORTS MALE NO. 4 MENS 10-11 RBBR BASE/NYLON COVER GREEN	L	X	PR	8
6515	01-323-6627	ARCH SUPPORTS MALE/FEMALE SPENCO .75LG MENS 8-9 WOMENS 9-10 NO.3	L	X	PR	4
6515	01-323-6628	ARCH SUPPORTS MALE SPENCO .75 LG MENS 12-13 NO. 5 RUBBER/NYLON	L	X	PR	4
6515	01-335-4642	BRACE LEG MALE/FEMALE LARGE ADULT 16"LG FITS EITHER LEG PLAS ADJ	L	X	EA	1
6515	01-336-2905	SUPPORT KNEE ORTHO PATELLAR STBLZ MEDIUM SZ 14-15" CIRC REUSABLE	L	X	EA	8
6515	01-336-3488	SUPPORT KNEE ORTHO PATELLAR STBLZ LGE 15-16" CIRC RBBR REUSABLE	L	X	EA	8
4720	01-345-2256	TUBING NONMETALLIC 1200 PSI RUBBER LATEX SMOOTH CLEAR 50'LENGTH	D	X	RO	1
6515	01-348-5108	ARCH SUPPORTS WOMENS SIZE 6-8 MENS SZ 7-8 REAR FOOT SUPPORT PLAS	L	X	PR	4
6515	01-359-3472	GONIOMETER ORTHOPEDIC 8" LG 0.030 VINYL PLASTIC BROAD ARMS CLEAR	L	X	EA	1
6515	01-365-2042	FELT PADDING ORTHO 36X21X0.25" HIGH GRADE WHITE W/DISPEN BOX 1YD	L	X	RO	1
6515	01-370-3105	CUFF SHOULDER CRYOTHERAPEUTIC MID-SIZE COMPRESSED AIR LINE OPER	L	X	EA	1
6515	01-370-3927	CUFF KNEE CRYOTHERAPEUTIC EXTRA LARGE SIZE URETHANE COATED NYLON	L	X	EA	1
6515	01-372-8816	HEEL CUP ORTHO DSGN REGULAR SZ TULI'S WAFFLE DSGN WT UNDER 175LB	L	X	PR	4

Appendix F
Physical Therapy Medical Equipment Set (page 3 of 3)

6515	01-372-8817	HEEL CUP ORTHO DSGN LARGE TULLI'S DSGN FWT 175LB & OVER MOLDED	L	X	PR	4
6515	01-381-2641	STABILIZER ANKLE BRACE SWEDE-O-DESIGN MENS MEDIUM POLYETHYLENE	L	X	EA	5
6515	01-381-2671	STABILIZER ANKLE BRACE SWEDE-O-DESIGN MENS LARGE POLYETHYLENE	L	X	EA	5
6515	01-387-5860	CUFF ANKLE CRYOTHERAPEUTIC AIRCAST DSGN COMPRESSED AIR LINE OPER	L	X	EA	1
6515	01-422-6153	COOLER CRYOTHERAPY HOLDS ENOUGH WATER/ICE FOR 6-8 HOURS	L	D	EA	1
6510	01-456-2000	ADHESIVE MOLESKIN 4 YDS LONG 9" WIDE SOFT 12 PER PACKAGE	L	X	PG	1
6515	01-468-6941	BELT LUMBOSACRAL SUPPORT 39"X 47"X 3" LRG CHARCOAL HOOK & LOOP	L	X	EA	2
6530	01-472-4889	PACK MEDICAL JUMPABLE GREEN OLIVE DRAB FOR USE BY A PARACHUTIST	J	X	EA	2
6515	01-478-8821	TAPE KIT ATHLETIC KNEE & SHOULDER	L	X	EA	2
6515	01-497-7954	CRUTCH ALUM ADULT SZ ADJ 45"-52" REUSABLE HEIGHT SCALE	L	D	PR	2
6530	01-501-0569	TRACTION SYSTEM PNEUMATIC FOR CERVICAL	L	X	EA	2
6530	01-503-1054	LUMBAR TRACTION DEVICE FRICTION FREE TRACK ACTIVELY MOVING SURF	L	N	EA	1
6515	01-503-5749	TRANSDERMAL DRUG DELIVERY SYS ELECT PATCH 80MA-MINUTES	L	X	EA	10
6515	01-507-8074	SPLINT WRIST & FOREARM SAM SOFT SHELL 15"X 4.5" 20S	L	X	PG	2
6515	01-514-7535	GONIOMETER, ORTHOPEDIC SMALL 6"	L	X	EA	1
6510	01-519-1098	DRESSING HYDROCOLLOID 5.5X5.5" STERILE 5S	L	X	PG	18
6505	01-522-5164	DEXAMETHASONE SODIUM PHOSPHATE INJECTION USP 4MG/ML 30 ML VIAL	L	X	VI	1
6515	01-529-9883	BRACE KNEE SZ LARGE 17"LG HINGED REUSEABLE	L	X	EA	4
6515	01-530-0515	BRACE KNEE NEOPRENE SLEEVE KNEE DUAL AXIS HINGED CONTROL SZ MED	L	X	EA	4

Appendix G

Physical Therapy Critical Expendable Items List (Page 1 of 2)

ITEM DESCRIPTION	ORDER NUMBER
TRACTION DEVICE FRICTION FREE Lumbar	6530015031054
TRACTION SYSTEM PNEUMATIC FOR CERVICAL	6530015010569
GONIOMETER, ORTHOPEDIC LARGE 12"	6515015147540
GONIOMETER, ORTHOPEDIC SMALL 6"	6515015147535
GUN HEAT ORTHOPEDIC LIGHTWEIGHT TEMP RANGE UP TO 700 DEG 4.5 AMP	6515012978683
STETHOSCOPE COMBINATION LITTMAN CLASSIC II 28"LG BELL-DIAPHRAGM	6515013146694
STIMULATOR NERVE TRANSCUTANEOUS UNIT TENS 9V DC	6515015147613
STIMULATOR ULTRASOUND COMBO PORTABLE	6515015194251
SPLINT WRIST & FOREARM SAM SOFT SHELL 15"X 4.5" 20S	6515015078074
SPLINTING MATERIAL 45IN X 6IN OCL CONTOUR SINGLE SPLINT 5S	6515014618338
SPLINTING MATERIAL ORTHO DESIGN 72X4" ROLL FORM ALUM/RUBBER FOAM	6515013589488
SPLINTING MATERIAL ORTHOPEDIC 30IN X4IN OCL CONTOUR SGL SPLINT5S	6515014618357
SPLINTING MATERIAL ORTHOPEDIC OCL CONTOUR SINGLE SPLINT 4X15IN5S	6515014618369
MAT EXERCISE PHYSICAL THERAPY 96X72X2.5IN LIGHTWEIGHT WATERPROOF	6530011667765
TABLE TREATMENT FOLDING 72X24X28-30 INCHES PORTABLE PADDED	6530011173882
TABLE TREATMENT PHYSICAL THERAPY WITH FACE APT PADDED FOLDING	6530015269148
TIMER ALARM 3CHANNEL PRECISELY COUNTS DOWN TIMES UP	6645014591499
TIMER INTERVAL MECHANICALLY OPERATED 1-60 MIN TIME SETTING	6645008808045
SANDBAG PHYSICAL THERAPY 5.5 POUND (2.5 KG)	6530011669014
HAMMER REFLEX TESTING TAYLOR LARGE 7-8" LG 0.75" THK TRIANGULAR	6515003406700
SHORTS PATIENT ADULT XL WAIST 38-45" BLUE DISP 100S	6532015351627
STIMULATOR NERVE TRANSCUTANEOUS PALM HELD MUSCLE RELAXANT MONITO	6515014630901
STIMULATOR NERVE TRANSCUTANEOUS UNIT TENS 9V DC	6515015147613
STIMULATOR PERIPHERAL NERVE BLOCKADE MONITOR PTBL BATTERY POWER	6515013975212
STIMULATOR PERIPHERAL NERVE 120/230VOLT 50/60HZ AC	6515011676658
STIMULATOR ULTRASOUND COMBO PORTABLE	6515015194251
BLADE ORTHO CAST CUTTER A19 CIR TYPE II 2" W/O ARBOR OSCILLATING	6515003234515
CUTTER ORTHOPEDIC CAST STRYKER 10"LG 115V 60HZ 60W AC/DC OSC	6515003234510

Physical Therapy Critical Expendable Items List (Page 2 of 2)

ITEM DESCRIPTION	ORDER NUMBER
SHORTS, PAPER DISPOSABLE, MEDIUM	6532-01-093-7969
SHORTS, PAPER DISPOSABLE, LARGE	635-896-0401
JAMAR, HAND'S ON EVAL KITt	6515-08-137-5593
TAPE MEASURE	2867-01-3402
CANE	6515-00-774-0000
CRUTCHES	3821-4860CA
CRUTCH, TIPS	6515-01-013-3911
CRUTCH, AXILLARY PADS	6515-00-777-7340
CRUTCH, HAND PADS	651500-762-8902
FOOT MODEL	08330C8142
HAND MODEL	08330C8150
HIP MODEL	08330C8164
KNEE MODEL	08330C8166
SHOULDER MODEL	08330C8151
SPINAL COLUMN MODEL	0833A783127
CUFF WEIGHT VELCRO CLOSURE 2#	
CUFF WEIGHT VELCRO CLOSURE 4#	
CUFF WEIGHT VELCRO CLOSURE 5#	
CUFF WEIGHT VELCRO CLOSURE 10#	
CUFF WEIGHT VELCRO CLOSURE 20#	