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In an effort to enhance Soldier performance, the FY15 Army Study Program awarded the Army's Maneuver Center of Excellence and The MITRE Corporation funds to conduct a study on squad training in Programs of Instruction and Programs of Record. This report summarizes the study team's process and recommendations for inserting human performance enhancement skills (resilience, performance enhancement, and advanced situational awareness) into existing Army programs. Ultimately, this should improve institutional and operational training and develop more adaptive, resilient, and lethal squads. Using a cost-benefit analysis approach, the team identified and evaluated several courses of action for enhancing Programs of Instruction and Home Station Unit Training.

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Abstract

In an effort to enhance Soldier performance, the FY15 Army Study Program awarded the Army's Maneuver Center of Excellence and The MITRE Corporation funds to conduct a study on squad training in Programs of Instruction and Programs of Record. This report summarizes the study team's process and recommendations for inserting human performance enhancement skills (resilience, performance enhancement, and advanced situational awareness) into existing Army programs. Ultimately, this should improve institutional and operational training and develop more adaptive, resilient, and lethal squads. Using a cost-benefit analysis approach, the team identified and evaluated several courses of action for enhancing Programs of Instruction and Home Station Unit Training.

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Executive Summary

Many recent studies link cognitive skills training to greater overall performance, self-efficacy, and confidence. One study, in particular, reports Soldiers who had received rigorous cognitive skills training demonstrated greater use of overall cognitive function, increased confidence, and achieved higher performance on measured military tasks and physical activities (compared to a control group) [1]. Complementary studies suggest that the techniques in cognitive and mind fitness training are optimally learned when presented first through lessons/instruction and then reinforced through practice [2]. A preponderance of evidence suggests that cognitive based training for high stress domains - training that includes resilience, mental performance enhancement, and situational awareness techniques – is absolutely critical where performance is paramount.

What is the training strategy and what are the key training components the Army must develop to cost effectively achieve the outcomes suggested by these studies?

This report summarizes the findings from three years of military and government research and demonstrations and provides the answer to this question. A study team comprising government, military, academia, research institutions, and industry, working with Army squads, has developed a small tactical unit based Integrated Training Strategy (ITA) that integrates cognitive and social skills training into existing warrior skills training programs that apply across a Soldier's entire career. The ITA applies adult learning strategies to Army Programs of Instruction (POI), integrates stressors into combat realistic scenarios, injects technologies into Army training Programs of Record (POR), and employs self-reflection after action reviews as the critical foundational components of the strategy. These components are built upon the ITA framework, stress exposure training, a concept developed in the 1990's as an experiential learning approach to improve tactical decision making under stress in US Navy combat teams and has evolved significantly under the Federal Law Enforcement Training Center (FLETC).

What are reasonable courses of action and their cost/benefit, for the Army to implement the foundational components of the ITA across the Institution and at Home Station?

This report documents examples prescribing how to revise lesson plans to support instruction and training of human performance enhancement (HPE) skills. Also included are cost-benefit analyses for various courses of action for adoption and implementation of the ITA in the Army Institution (specifically, for 11B10-OSUT) and at Home Station. For One Station Unit Training (OSUT), the study's recommendation is a balanced approach that provides primer instruction in HPE skills (definition, purpose, objectives) and a revision of all lessons to include how HPE skills apply to the instruction and how practice and mastery contribute to performance and growth. Given this study's findings, the Army's Training and Doctrine Command (TRADOC) should apply similar revisions to other courses such as the Drill Sergeant School, and Staff and Faculty Instructor POIs along with school instructor certification programs. This would enable the non-commissioned officers (NCO) who train Soldiers to be more capable warriors and HPE skill instructors. For training collective tasks (e.g., at Home Station), the study recommends providing thorough HPE training for a group of NCOs within every infantry unit, building a training support package (TSP) with scalable and tailorable scenarios, and configuring all simulation centers and CACTF/MOUTs to support the ITA.

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1 Problem Statement

The Army has spent two years studying how to train cognitive skills in infantry squads through the Squad Overmatch study (FY13 [3] and FY14 [4]) and has converged on an instructional strategy that integrates HPE[1]-enhanced POIs, stress-based scenarios, technology-enhanced PORs, and focused after action reviews (AAR). The Army must define and evaluate several courses of action to understand what resources are needed to implement the instructional strategy. An additional challenge for the Army is to develop a plan for delivering this integrated training approach to the larger operating force including other military occupational specialties (MOS).

1.1 Official Army Supporting Documents

The Army Operating Concept [5] states that Army leaders must develop new innovative leaders and optimize human performance to win in a complex environment. According to "The Army Vision – Force 2025" white paper [6], the Human Dimension is key to risk mitigation and providing innovative capabilities for the future Soldier. The U.S. Army Human Dimension Concept [7] outlines the framework for developing Soldiers' cognitive, physical, and social abilities. It further emphasizes that the squad will remain the foundation and cornerstone of the Army. To win in a complex environment, small tactical units and leaders must have improved situational awareness, judgment, and emotional maturity to determine if, when, and how the application of lethal force would best support the mission. Additionally, the Army must find a balance that optimizes performance and minimizes adverse health effects on Soldiers, such as symptoms associated with post-traumatic stress (PTS).

Leveraging the Human Dimension Concept's framework, the Army developed a Human Dimension Strategy along lines of effort which establish the ways to achieve the Strategy's desired end outcome of optimizing human performance in every Soldier. The first line of effort (strategic objective) is focused on optimizing the capability and capacity of cognitive performance of every Soldier in the force. This objective requires that the Army develop innovative learning programs that improve decision making and other cognitive abilities through individual and collective learning. The second is focused on developing and conducting training in complex environments to build cohesive teams that thrive in ambiguity and chaos. This entails accelerated training through improved training capabilities, including synthetic training, that replicate the complexity of the operating environment.

The guidelines defined by Army leadership present challenges to training and education. In response, FM 6-22 Leader Development [8] has provided the doctrinal framework covering methods for leaders to develop other leaders, improve their organizations, build teams, and develop themselves. Within this framework, effective education and training implementations will contribute to solving Army Warfighting Challenges (AWfC) 8 (Enhance Training), 9 (Improve Soldier, Leader, and Team Performance), and 10 (Develop Agile and Adaptive Leaders), as well as contribute to meeting the learning requirements of other AWfCs; for example, AWfC 15, Conduct Combined Arms Maneuver; Learning Demand 15.1: What training strategies (LVC-G [Live, Virtual, Constructive, and Gaming]) and scenarios will best support proficiency in combined arms maneuver in future operations [9]? The application and integration

[1] Human Performance Enhancement (HPE) skills are listed and defined in Appendix D. They include Resilience, Performance Enhancement, and Advanced Situational Awareness skills.

of HPE skills throughout Army training represents a practical and powerful method for beginning to meet the demands of these instructions from Army leadership.

2 Squad Overmatch

2.1 History

In 2013, in response to an Army Warfighting Challenge (#8), the Army's Program Executive Office, Simulation, Training, and Instrumentation (PEO STRI) examined injecting technologies as a cost-effective way to enhance training realism in live training Programs of Record (POR). PEO STRI believed that by providing greater realism in training the Army could better prepare Soldiers for conditions they would encounter in the operational environment. This would help them become less sensitive to psychological trauma and less likely to develop mental scars that could gradually lead to PTS and possibly suicide. With the help of government request for information (RFI) solicitations, the Squad Overmatch Study team identified promising technologies that provided tactical, visual, aural, tactile, and olfactory realism. The team developed the concept of the Integrated Training Approach (ITA) (refer to section 2.2 for definition), which proposed integrating training for resilience, performance enhancement, and situational awareness (in a graduated manner) with warrior skills training presented in classroom, gaming, immersive, and live environments (via technology insertion into POIs and PORs) to develop HPE skills.

In 2014, the study team then reached out to the Army Research Institute (ARI) and the Army Research Laboratory (ARL) to develop an instruction-based curriculum that would complement the enhanced operational training that the technology-enhancement PORs would provide. The team coordinated with the Federal Law Enforcement Training Center (FLETC) to refine the training model that incorporates information provision (classroom-based instruction), skill development (gaming and immersive environment), and practical application (live environment training), and formulated the ITA. The team assembled an expert team of scientists and engineers, and demonstrated the ITA at Ft. Benning in June 2014. The findings were presented and published in a report later that year.

Questions concerning metrics, recommended training components, and scientific validation remained. In 2015, the Squad Overmatch Study team therefore set several objectives: identify and demonstrate how foundational components could be inserted into existing POIs and PORs, develop an analytical model that assesses the cost and benefit of various injection options, and recommend (best) courses of action.

2.2 Integrated Training Approach (ITA)

The ITA evolved from a squad training concept that was developed in the FY13 Squad Overmatch Study and demonstrated in the FY14 Squad Overmatch Study. The ITA integrates resilience and situational awareness skills (HPE) training into existing warrior skills training programs across a Soldier's career. To accomplish this, the ITA uses an instructional strategy that includes a program of instruction (POI), instructor observation through iterative classroom and skill development practice, scenarios executed in virtual and live programs of record (POR), and a focused after action review (AAR). The ITA also provides for augmenting existing live training devices injected with technologies to simulate realistic combat stressors**.** Figure 1 depicts a conceptual view of the ITA.

Figure 1. Integrated Training Approach

As the central framework, the ITA instructional strategy uses stress exposure training (SET) methodologies to enable developing situational awareness, resilience, and performance enhancement skills alongside warrior skills. SET is a three-phase training program - designed to provide information, skills training, and practice - with the goal of learning how to cope and perform while exposed to combat stressors. The first phase of SET is preparatory – it provides basic knowledge about situational awareness, resilience, performance, stress and its effects. Delivery modes include classroom instruction, discussions, videos, and instructional simulations that explain concepts and develop lexicons. The second phase focuses on skills acquisition - learning skills and developing proficiency in situational awareness, individual and team performance, decision making and stress coping. These skills can be developed in simulation and virtual environments but may also be practiced in classroom or other training venues (e.g., relaxation and stress management techniques, such as deliberate breathing, can be practiced anywhere). The third phase of SET involves a practical application of skills in a setting that simulates or reproduces stressors. Skills are practiced under gradually increasing stressful conditions with performance feedback provided by the instructor or other trainees. Delivery modes typically include simulated (gaming) and/or real scenarios in PORs or elsewhere (e.g., search and clear techniques can be practiced in most any room), with during and after action reviews.

2.3 Foundational Components of the ITA

The ITA represents an integration of education and training methodologies. As discussed above, the framework of the ITA is stress exposure training. The ITA components, representing the foundation of the approach, are listed and discussed below.

- Foundational Education in HPE-enhanced POIs
- Stress-Based Scenarios

- Training in Technology-enhanced POR
- Learning Reinforced through Focused AARs

Foundational Education in HPE-enhanced POIs

Training begins with understanding the purpose and objectives for training and showing how that training develops relevant and applicable skills. Trainees must understand how Human Performance Enhancement (HPE) skills – advanced situational awareness, resilience, performance enhancement – relate to required tasks and how mastery of these skills contribute directly to performance and growth. In the FY14 and FY15 demonstrations, the Squad Overmatch Study collected feedback and data from squads on how application of HPE skills, by increasing awareness and providing techniques for managing stress, contributes to better performance. Based on the findings from the early (FY14) demonstration the study team identified skills, trained through the Army's Comprehensive Soldier and Family Fitness (CSF2) and Advanced Situational Awareness (ASA) programs, that are important for developing agile and adaptive leaders. In this study, we describe how such skills, that are largely lacking in courses, can be integrated into existing POI lesson plans (specifically, 11B10-One Station Unit Training (OSUT)) with minimal impact to overall course structure and duration.

Stress-Based Scenarios

Scenarios play a critical role in developing cognitive skills in both individual Soldiers and squads. Scenarios must be designed to support training objectives and provide opportunities to develop and practice learned HPE skills. A scenario comprises more than just a description of time ordered events. Scenarios must provide the mission of the unit and what activities a unit must conduct in order to achieve the desired end state (e.g., Operations Order). A scenario must also provide a summary of intelligence gathered to include information (e.g., capabilities, vulnerabilities) on high valued targets and other individuals. Additionally, a scenario must provide a storyline (e.g., narrative) whose events trace to requirements for exercising HPE skills.

In the FY14 and FY15 demonstration events, the study team coordinated with the Walter Reed Army Institute of Research (WRAIR) to incorporate stressors into scenarios to provide situations that expose participants to realistic decision making challenges so their performance could be assessed in the presence of time pressure, risks, changes in baseline, and uncertainty. By practicing with such scenarios in virtual and live environments, participants develop experience to draw upon when facing novel situations. The findings from the demonstrations also suggested that scenarios be played out in a relatively short period of time, providing opportunities for pause, review, reflection, and feedback.

Training using Technology-enhanced PORs

A guiding principle for the Squad Overmatch studies is to leverage existing Training Aids, Devices, Simulators, and Simulations (TADSS). In response, the FY14 and FY15 study team used gaming (Games for Training Virtual Battlespace 3 (VBS3)), immersive (Dismounted Soldier Training System (DSTS)), and live PORs (Combined Arms Collective Training Facility (CACTF) and Military Operations on Urban Terrain (MOUT) sites) to provide training environments for individual skills development and practical application. These PORs lack some capabilities that are required to train HPE. For example, the live sites alone do not provide the atmospherics that may be typical of a small rural village - they require props and role players

to provide a realistic setting. Training with live role players, while effective in terms of realism, does provide challenges; for example, the cost, experience, and repeatability of using live actors. The study team canvassed commercial, academic, and research institutions for a possible surrogate solution and introduced wall based avatars that can shoot, behave, and respond in a natural manner when questioned or injured. The team evaluated technologies with respect to their ability to provide situational awareness cues and possibly (scenario dependent) behave in a manner that would require trainees to draw on their resilience skills (e.g., to have a dialog with an agitated detainee).

Additionally, the FY14 and FY15 study teams employed scent generators, artillery and sniper fire effects, improvised explosive devices (IED) and booby traps, casualty effects (entry and exit wounds, blood/moulage), and haptic feedback devices. Various combinations of these technologies can be used in live training environments to provide visual, auditory, olfactory, and haptic cues and stimuli that simulate combat situations as closely as possible. Research is ongoing to investigate how some of these technologies may be applied to gaming training environments as well. For gaming, the study team employed higher fidelity (than natively supported by the POR) representations of the environment (urban, terrain), natural virtual humans/threats (visuals, behaviors), and tactical equipment (Individual First Aid Kit (IFAK) II) to enable training situational awareness, stress management/self-regulation, decision making, and problem solving.

Learning Reinforced through Focused AARs

The FY14 and FY15 Squad Overmatch Studies incorporate a focus on the cognitive component of the Human Dimension (HPE skills) into AARs. The governing principle is that Soldiers best learn HPE skills by reflecting on their training experiences. The goal of the focused AAR is to provide a model for how to support team self-correction and mistake detection based on the results of a squad's training experience. Additionally, the focused AAR uses the team self-correction method to facilitate squad initiative and ownership of the AAR execution. The focused AAR differs from the standard AAR in that the emphasis is on squad members engaging in self/team discussion to diagnose tactical and mental mistakes and set specific, measurable, realistic goals for improvement. The FY14 and FY15 study team findings recommend that a focused AAR is an effective appraisal of HPE performance and HPE learning methodology that should be used for all gaming and live training.

2.4 Future Activities

In October 2015, Squad Overmatch Study participated in the Army Expeditionary Warfighter Experiment (AEWE) at Fort Benning. This pilot study emphasized Tactical Combat Casualty Care and identified experiment parameters in preparation for an experiment in June 2016 designed to validate the training effectiveness of the ITA. The Squad Overmatch team will participate in the Army Warfighting Assessment (AWA), Ft. Bliss TX, in October 2016 to demonstrate the ITA to a wider audience and solicit Army leadership feedback for refinement. Beyond 2016 the study team plans to develop train-the-trainer and training support packages that enable the Army to implement and sustain the ITA without daily hands-on support from members of the scientific and engineering communities.

3 Research Methodology

The study team began by seeking to understand the training environment and to determine where to focus its initial efforts. The team comprised a subject matter expert (SME) with over 30 years of experience in the Army and civilian members who participated in the CSF2 and Advanced Situational Awareness-Basic (ASA-B) training alongside Soldier trainees.

The study team conducted research in three phases to provide a meaningful and practical course of action for better integration of HPE skills.

1. Examined the Army's training continuum to better understand the context for inserting HPE skills.
2. Identified specific training events to target HPE skill insertion.
3. Developed guidance and a set of job aids for integrating HPE skills into a selection of Army training.

3.1 Training Continuum

Per the U.S. Army Regulation 350-1 [10], the Army's training and leader development efforts support training in three training domains: institutional, operational, and self-development. Initial entry training, part of the institutional training domain, instills common values and qualifies Soldiers on both common tasks and critical tasks of their assigned occupational specialty. Institutional training provides subsequent functional and professional military education (PME) for Soldiers throughout their careers and support to units on a continuous basis, and as described in later sections, opportunities for instilling HPE education and skill development. Following initial entry and advanced individual training, operational training focuses on the unit as a whole. Operational training includes, but is not limited to, progressive training conducted at home station and while operationally deployed. Later sections of this report describe various courses of action for implementing components of the ITA, presenting HPE options for enhancing home station unit training. Finally, Army schools, which provide training and education products that can be used for self-development, also afford a cost-effective means and mechanism for HPE education and skill development.

3.2 Examining Training Continuum

The team recognized that the sheer amount and complexity of training that the U.S. Army executes on a yearly basis is astounding and far too great to examine in a one year study. Starting with a list of over 200 training courses taught through the Maneuver Center of Excellence (MCoE), the study team therefore refined the scope of its research for FY15 with a few criteria:

- Training Courses must be taught at Ft. Benning.
- Training Courses must focus on a specific Infantry Military Occupational Specialty (MOS). The Squad Overmatch Study has focused primarily on infantry squad training.
- Training Courses must be designed for Soldiers in active Army. This assumes that courses for reserves are based on training courses for active Army and will automatically benefit from augmentations of lessons in the POIs for active Army courses.

With a refined list of about two dozen training courses, the study team began collecting course documentation by contacting representatives for each course and requesting POIs and lesson plans directly. Eventually, the team received access to the Training Development Capability (TDC) website, an online portal for managing POIs, lesson plans, and other documents. This allowed the team to acquire any remaining documentation and to check for the most recent versions.

The team then conducted an early analysis of about 15 training courses (e.g. 11B10-OSUT, Infantry Advanced Leaders Course (ALC), Infantry Basic Officer Leaders Course (IBOLC), OSUT Indirect Fire Infantry, OSUT Cavalry Scout, Sniper School, etc.) gaining an understanding of how POIs are structured, how lessons may overlap between POIs and across MOSs, and how the Army currently teaches ASA, resilience, and performance enhancement skills. The team scanned the topics of over 700 lessons across all of these POIs and mapped HPE skills to all the lessons that could potentially be used to reinforce them. In addition, the team collected data on how many hours in each course are already spent teaching HPE skills. With this raw data, the team selected specific areas of focus.

3.3 Identifying Specific Training Events

Discussions with the MCoE made it clear that the study should pursue a two-pronged approach: one focused on training from a schoolhouse perspective and the other on training from an operational perspective. For a schoolhouse perspective, the team selected the 11B-OSUT course POI for two reasons. First, the MCoE has full control over the infantry school's curriculum, which makes it easier to identify and consult SMEs as well as to make necessary revisions to the course material. Second, the MCoE wished to reach a large audience. All enlisted infantrymen begin their Army career with OSUT; whereas, courses aimed at non-commissioned officers (NCO) or officers, such as the Senior Leader's Course (SLC) or IBOLC, only reach a smaller group of infantrymen. The MCoE recommended a set of 12 lesson plans that provided a representative variety of the types of skills taught in OSUT, and the study team selected an additional four (see Table 1). For the operational perspective, the study team identified recurring home station unit training as an opportunity for refresher-training and standardizing language and knowledge base within units.

Table 1. OSUT Lesson Plans Reviewed

Lesson Number	Lesson Name
071-IRGOC001	Field Training Exercise (11B)
071-IRHOH014	Urban Operations 1
071-IRHOP068	ITT (Foundation of a Tactically Proficient Soldier)
071-IRAOH004	BTT 2 Buddy Team Blank Fire
071-IRHOP129	BTT 3 Buddy Team Live Fire
071-IRGOJ018	INF OSUT RM 18 – Standard Qualification (Record)
071-IRHOA002	Physical Readiness Training
071-IRHOL026	Conditioning Obstacle Course
071-IRHOL033	Confidence Obstacle Course
071-IRHOL034	Confidence Tower

071-IRHOL150	Team Development Course
071-IRHOQ101	Weapons Training – Hand Grenades
071-IRGOG001	Basic Military Communications
071-IRHOO031	Conduct 6 Mile Foot March
071-IRHOK115	Eagle Skills Assessment (ESA)
071-IRGOJ009	INF OSUT RM 9 – Fundamentals of Marksmanship

The team reviewed each OSUT lesson plan to identify where each training event could include or emphasize HPE skills. In particular, the team identified where the 12 resilience skills, 6 performance enhancement skills, 8 learning enhancement skills, and 6 ASA skills could be reinforced (see Appendix D for details about the HPE skills). The team provided annotations and notes throughout each OSUT lesson plan.

3.4 Developed Guidance and Job Aids

After reviewing the OSUT lesson plans used for unit training, the team evaluated how often opportunities for training or reinforcing specific HPE skills appeared across the document set in order to identify:

1. Easily trainable skills
2. Which lessons best facilitate integration of HPE skills
3. Patterns in the types of skills that tended to co-occur with one another to illuminate training strategies for them.

The team independently reviewed the 16 OSUT lesson plans. After all team members reviewed a set of documents, they met to discuss the HPE skills noted and to resolve any inconsistencies or questions that arose. For each of the 16 lesson plans, the team reached consensus about the most relevant HPE skills and produced an annotated document that gives instructor guidance and draws attention to logical insertion points.

Figure 2, spanning the next few pages, shows an abbreviated example of an output of this process: an OSUT lesson plan with annotations agreed upon by the entire team. The figure includes callout comments for clarification. An “HPE Instructor Note” provides guidance specifically directed only to the instructor (e.g., material to emphasize and expectations from the students). An “HPE Note” is a note that the instructor uses as a reminder of the relevant HPE skills (and how they apply to a particular lesson) that must be emphasized to the students. The complete collection of lesson plans that were annotated can be found in Annex A.

In addition to a complete set of annotated OSUT lesson plans (refer to the Annex A), the team developed a prototype job aid for trainees and instructors. The job aid is a small flip book that summarizes the HPE skills (see Appendix B and Annex A). It is intended as a handy, portable reference for Soldiers.

LESSON PLAN REPORT

URBAN OPERATIONS 1 (OSUT)
071-IRHOH014 / 01.5

Approved 29 Apr 2015

Effective Date: 29 Apr 2015

SCOPE:
None

Materials Required

Instructor Materials:

Drill Sergeant will use the Center for Army Lessons Learned (CALL) website at http://call.army.mil/ and/or the Battle (BCKS) website at https://bcks.army.mil/default.aspx my.mil/ for Mounted ManeuverNet) to get the most current and relevant information on cedures (TTPs) used in the Operational Environment (OE).

Resources have been added for instructor and student reference.

ArmyFit Website for MRT: https://armyfit.army.mil/Protected/

CVIT/ASAT Courseware: http://proxy-lb-1504988251.us-gov-west-1.elb.amazonaws.com/learn/preview/app/cvit

Student Materials:

TRADOC Pam 600-4, IET Soldier's Handbook.

198th Infantry Brigade Lesson Plan Book.
Human Performance Enhancement Job Aid
CVIT/ASAT Courseware: http://proxy-lb-1504988251.us-gov-west-1.elb.amazonaws.com/learn/preview/app/cvit

Guidance/ Conduct of Lesson

NOTE: Before presenting this lesson, instructors must thoroughly prepare by studying this lesson and identified reference material.

HPE Instructor Note: Instructor should be prepared to reinforce Human Performance Enhancement (HPE) skills of resilience, performance enhancement, and advanced situational awareness where appropriate and as noted throughout this document.

Instructor notified that there are relevant HPE skills throughout this lesson

Drill Sergeants/Facilitators (instructor es learners to understand the relevance and perspe

Terminal Learning Objective

NOTE. Inform the students of the following Terminal Learning Objective requirements.
At the completion of this lesson, you [the student] will:

Action:	Execute operations in an urban environment.
Conditions:	During day light hours Soldiers will learn the hazards of operation s in an urban environment. Soldiers will learn Short-Range Marksmanship, Movement Techniques, Building Entry and Clearing, Breaching, and Selection of Fighting Positions. They will conduct a basic defense and attack in the urban environment.
Standards:	Soldier will demonstrate basic working knowledge of how to fight urban environment **Learning Domain: Psychomotor** **Level of Learning: Applying**
Learning Domain - Level:	Cognitive; Psychomotor
No JPME Learning Areas Supported:	None

HPE skills are summarized and given context for the lesson

Instructional Lead-in

During this period of instruction, you will learn several fundamentals of identifying, acquiring, and engaging targets, performing movement tech and clearing a room.

HPE Domain: Assertive Communication; Attention Control

HPE Note: It is critical to use Assertive Communication to speak clearly and in a controlled manner across your team, no matter the method of communication (e.g, Verbal, Hand Gestures). You will need to apply Attention Control to ground yourself to determine what is important in the moment.

E. ENABLING LEARNING OBJECTIVE

ACTION:	Conduct Clearing a Room
CONDITIONS:	The team is required to enter and clear a room.
STANDARDS:	
	Conduct clearing a room so that the team kills, possibly captures, or forces the withdrawal of all enemy in the room and is prepared to repel an enemy counterattack
LEARNING DOMAIN - LEVEL:	Cognitive; Psychomotor
JPME I LEARNING AREAS SUPPORTED:	None

HPE skills within an enabling learning objective are summarized.

HPE Note: You will conduct clearing a room. Exercising Attention Control is always important but especially crucial immediately before and while you are clearing a room. Your attention is a limited resource. When things are competing for your attention, ask yourself "What's Important Now?" (W.I.N.).
Specific techniques for maintaining Attention Control and Assertive Communications in the events leading up to, during, and after room clearing will be presented to you in the following steps.

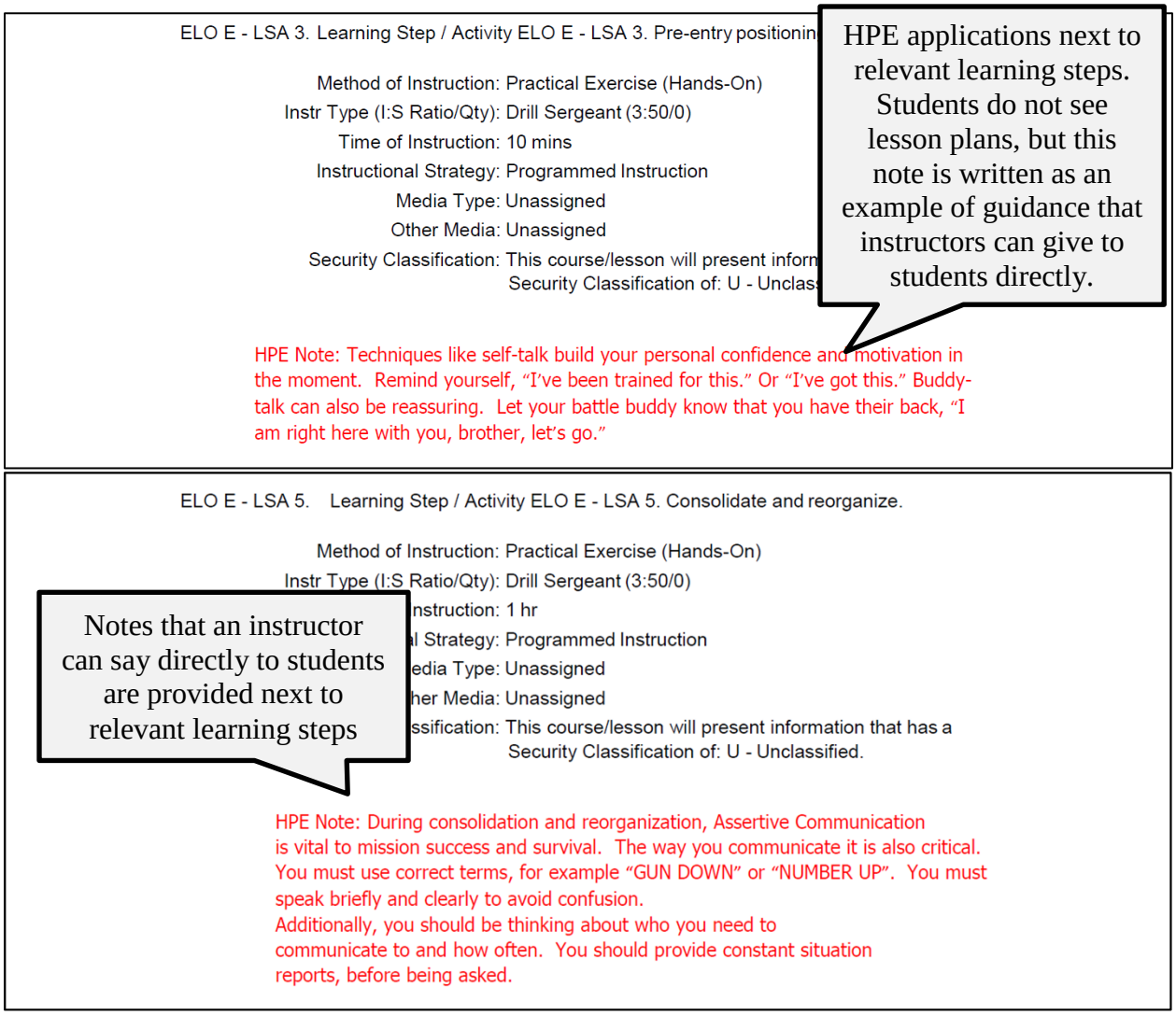

Figure 2. Excerpts from Annotated Lesson Plan, Urban Operations 1 (OSUT)

4 POI Key Findings

4.1 Existing Education and Training for HPE Skill Development is Minimal

Optimal human performance in Soldiers requires developing resilience, performance enhancement, and advanced situational awareness. Soldiers need resilience skills to adapt effectively to adversity. They need performance enhancement skills to monitor and improve how they perform complicated tasks. They need ASA skills to observe and evaluate cues from the human terrain in order to anticipate and properly react to potential threats. These skills are enablers for the success of our units, but they currently reach only a limited number of Soldiers and are only available infrequently. Table 2 indicates how many academic hours of instruction are currently devoted to HPE skills within several Infantry-related training courses. The values in the table show the total academic hours of lessons devoted to Advanced Situational Awareness and lessons devoted to resilience (e.g., IBOLC contains an ASA module with nine lessons totaling 39.4 academic hours and a "Ready Resilience Training" lesson containing 13 hours of instruction).

Table 2. Hours of HPE skills currently taught in Infantry education

POI	Total Hours	Hours of ASA	Hours of Resilience/ Performance Enhancement	POI Version Analyzed by Study Team
IBOLC	1563	39.4	13	v3—validated by TRADOC for FY16 1st Quarter
Infantry ALC	248	50	2	v4—validated by TRADOC for FY15 1st Quarter (FY16 still under analysis)
Infantry ALC	242.4	0	2	v5—under Analysis by TRADOC for FY16 1st Quarter
11B10-OSUT	766.3	0	2	v6.2—under Analysis by TRADOC for FY16 1st Quarter
11B10-OSUT	223.4	0	2.2	v7—under Analysis by TRADOC for FY15 4th Quarter, phase 1
11B10-OSUT	783.6	0	2	v7—under Analysis by TRADOC for FY18 4th Quarter, unphased

Training Courses are completely filled with the lessons needed to train Soldiers in warrior skills. The Army must develop a strategy for integrating HPE skills into training courses operating within the constraint of the amount of time a Soldier can participate in classroom training. The solution requires optimizing the training benefit of every lesson for the time Soldiers do spend in training courses.

4.2 Potential Opportunities and the "In-Stride" Concept

The study team discovered where HPE skills could be inserted within 11B10-OSUT, and the following sections illustrate how the Army could implement education enhancements without increasing the number of academic hours. In many cases, the additional instruction in HPE can be delivered in a classroom with minimal additional effort and training aids, simply by

reinforcing HPE skills and techniques that may have already been covered in foundation classes. The team refers to this as "in-stride reinforcement."

4.3 Summary of HPE Skill Annotations in 11B10-OSUT Lessons

While examining lessons in OSUT, the study team found a number of opportunities that could be used to practice and reinforce HPE skills in conjunction with the warrior skills already being taught. Table 3 shows the number of HPE skills (rows) identified by the reviewers across the 16 OSUT lesson plans (columns). The most frequently identified skills were energy management, integrating imagery, attention control, and active constructive responding and praise. The OSUT lesson plans with the most HPE skills identified within them were *Individual Tactical Test (ITT) (Foundation of a Tactically Proficient Soldier)* and *Urban Operations 1*.

Table 3. Presence[2] of HPE skills within the OSUT lesson plans (LP)

		LP - Field Training Exercise (11B)	LP - Urban Operations 1	LP - ITT Foundation of a Tactically Proficient Soldier	LP - BTT 2 Buddy Team Blank Fire	LP - BTT3 Buddy Team Live Fire	LP - INF OSUT RM 18 - Standard Qualification (Record)	LP - Physical Readiness Training	LP - Conditioning Obstacle Course	LP - Confidence Obstacle Course	LP - Confidence Tower	LP - Team Development Course	LP - Weapons Training - Hand Grenades	LP - Basic Military Communications	LP - Conduct 6 Mile Foot March	LP - Eagle Skills Assessment	LP - INF OSUT RM 9 - Fundamentals of Marksmanship	**SKILL'S PRESENCE ACROSS DOCUMENTS**	**SKILL'S PRESENCE IN % OF DOCUMENTS**
Resilience	activating events, thoughts, and consequences																X	1	6%
	active constructive responding and praise					X		X	X		X	X	X	X	X	X	X	9	56%
	assertive communication		X	X	X	X					X		X					6	38%
	avoid thinking traps			X													X	2	13%
	character strengths															X		1	6%
	detect icebergs										X							1	6%
	hunt the good stuff						X									X	X	3	19%
	mental games													X				1	6%
	problem solving																	0	0%
	put it in perspective												X	X			X	3	19%
	real-time resilience	X	X	X	X	X			X				X	X				8	50%
Performance Enhancement	attention control	X	X	X	X	X	X				X		X				X	9	56%
	building confidence				X	X	X	X						X			X	6	38%
	energy management		X	X	X	X	X	X	X	X	X		X		X	X	X	13	81%
	goal setting															X		1	6%
	integrating imagery	X	X	X	X	X	X	X			X		X	X	X	X	X	13	81%
	combat your tests						X	X								X		3	19%
	learn with your peers		X	X	X	X				X		X		X			X	8	50%
	plan and prioritize your time																	0	0%
	remember what you study	X																1	6%
	take effective notes	X		X														2	13%
Advanced Situational Awareness	atmospherics	X	X	X														3	19%
	autonomics		X												X			2	13%
	geographics	X	X	X														3	19%
	heuristics																	0	0%
	kinesics		X	X											X			3	19%
	proxemics		X	X														2	13%
	SKILLS PER DOCUMENT	7	11	12	7	7	6	5	3	3	3	4	4	6	9	7	10		

[2] An 'X' in this table indicates the team identified at least one instance in a lesson plan where the indicated skill could be applied.

4.4 Summary of HPE Skill Insertions

The following sections explain how and why the team integrated particular HPE skills into the OSUT lesson plans. As previously mentioned in this document, HPE skills are broken into several domains including resilience and performance enhancement from the CSF2 course and ASA (see Appendix D for definitions). Performance enhancement can be broken down to include another section of "learning enhancement" skills. Many of these skills apply more directly to academic and classroom training which are not prevalent in OSUT (but they are more so in ALC and IBOLC). The 18 skills included below are the most prevalent skills used in the team's annotations and are listed in the order of most frequently referenced. (Learning Enhancement skills, and several of the less frequently occurring skills are not included; however, basic definitions of all of the HPE skills can be found in Appendix D).

4.4.1 Energy Management

Energy management applies when Soldiers are required to participate in long periods of physically rigorous activity. Soldiers should use breathing techniques to modulate the flow of energy to ensure adequate levels of performance to match the demands of a situation. For example, when firing weapons, regulating breathing patterns will ensure stability of the weapon, resulting in increased accuracy. While taking the *Army Physical Fitness Test (APFT)*, Soldiers need to learn how to exert the proper amount of energy throughout each event to ensure that they do not over- or under-exert themselves.

4.4.2 Integrating Imagery

Integrating imagery was identified the second most often. Finding opportunities to insert this skill was relatively easy because it could be applied to almost all exercises. Integrating imagery insertions were made in situations where Soldiers would benefit from repetition and practice. Much of that occurs through mental rehearsal that trains both the mind and body to perform automatically and without hesitation. For example, during *Buddy Team Live Fire*, while Soldiers negotiate a given lane and engage the enemy, it is important to choose the appropriate movement techniques to reach each position. To properly execute these moves, Soldiers should mentally rehearse the successful movement techniques they have performed prior to the exercise.

4.4.3 Attention Control

Attention control was identified the most often across the OSUT lesson plans examined. The team inserted this skill in situations where it may be difficult for Soldiers to concentrate on or fully attend to their assigned task. Finding opportunities to insert this skill was not difficult because these tasks could vary from listening to long and detailed lectures to participating in a field exercise. Soldiers must take control of their attention by understanding when they are distracted and work on refocusing. This will sharpen awareness so that Soldiers do not miss relevant information. For example, during Conduct Tactical Movement in an Urban Area, Soldiers must remain attentive to the mission amidst distractions, identify which elements are controllable and which are not, and focus on the controllable ones.

4.4.4 Active Constructive Responding and Effective Praise

The team found this a relatively easy skill to insert because it could always be utilized in a team environment and was mostly tied to building confidence. The team inserted this skill at points when Soldiers attempt to overcome difficult tasks about which they may not feel confident. Throughout a mission, Soldiers should encourage each other by identifying their successes and even noting deficiencies that they could improve upon. Effective praise helps in building confidence and teaches Soldiers to replicate those successes in future missions. For example, when navigating the various obstacle courses, Soldiers should learn to give and receive effective praise by focusing on elements of their own and their peers' efforts that contribute to success on the course.

4.4.5 Real-time Resilience

Opportunities abound for learning real-time resilience because Soldiers are frequently put into stressful situations during training. The team made insertions where Soldiers face a situation in which counterproductive thoughts could interfere with their focus and performance on the task at hand. This resilience skill builds on skills such as avoid thinking traps and put it in perspective, which enable Soldiers to combat counterproductive thoughts by using evidence and optimistic thinking. Real-time resilience was demonstrated in lessons such as *Physical Readiness Training*, *Field Training Exercise (11B),* and *ITT (Foundations of a Tactically Proficient Soldier).* These lessons require Soldiers to recover from tough challenges and concentrate on reaching a goal.

4.4.6 Assertive Communication

Assertive communication was one of several HPE skills that occurred often (roughly 7% of the time) whenever an HPE training opportunity was identified. All team-based exercises and tasks require elements of strong communication. The team recommended insertions in lessons and situations where clear, concise, and affirmative communication needs practice to form a collective understanding of an operating environment. Whether communicating verbally, with hand gestures, or in writing, Soldiers must do so in a confident, clear, and controlled manner. For instance, when unit leaders issue operations orders (OPORD), they must communicate with authority and confidence so that subordinates can trust in, understand, and effectively carry out the orders. While working in a buddy team, tasks such as 'move under direct fire' require Soldiers to communicate about each move to each other to ensure they both acknowledge and understand the intent of their movements.

In one reviewer's interpretation, communications described in the OSUT lesson plans were highly task focused and occurred independently of the personnel involved. By contrast, communication as described in the Master Resilience Training Trainer Manual [11] is more focused on communications that arise as a result of interpersonal conflicts and depend heavily on the individuals involved. This conceptual distinction left considerable leeway for interpretation in how to describe "assertive communication."

4.4.7 Building Confidence

The team inserted the building confidence skill at points where Soldiers face difficult tasks which they might not feel motivated or confident in. Building confidence was related to other skills such as effective praise and integrating imagery. Receiving and giving effective praise in

certain situations can be a big boost to one's confidence. Additionally, Soldiers should evaluate both their setbacks and successes in order to improve themselves as they gain experience. They should replicate successes and improve in areas of failure by mentally rehearsing any exercise techniques they have learned to boost confidence in their ability to perform. For example, before taking the APFT, Soldiers must keep in mind the events in which they failed and ones in which they succeeded during practice.

4.4.8 Put It in Perspective

The team identified a few opportunities for the put it in perspective skill when Soldiers face situations where they could get stuck in a pattern of catastrophic thinking, resulting in high levels of anxiety. For example, during Conduct Negotiation, negotiators need to identify the best, worst, and most likely outcomes of the negotiations and to set realistic expectations around those outcomes. Sometimes the worst possible outcome is exceedingly rare, and should not dominate a negotiator's thinking.

4.4.9 Atmospherics

Soldiers are trained to use atmospherics to assess the environment by monitoring all five of their senses. Atmospherics describes how Soldiers sense their surroundings by developing a baseline of sights, smells, tastes, sounds, and feel of an area. This baseline enables them to identify anomalies (potential threats) and inform decisions. For example, in *Urban Operations 1*, when moving past a marketplace, they may observe that there is little to no activity, whereas their previous baseline assessment is that there is normally a large, noisy crowd in the area. This atmospheric shift would indicate an anomaly and a potential threat.

4.4.10 Kinesics

Kinesics can be used to assess a situation by interpreting a person's non-verbal body language. There were several opportunities for this identified in the training plans reviewed. For instance, when meeting with the key leader for negotiations, the leader's body language can indicate aggression, fear, deception, or agreement. Soldiers can use this to determine whether a situation may turn violent or dangerous.

4.4.11 Geographics

Geographics focus on how terrain (specifically, Anchor Points, Habitual Areas, and Natural Lines of Drift) create measurable and detectable patterns within any environment. For a collective task, such as Conduct Movement to Contact, knowing how an opponent uses (or is familiar with) the geographics of an area can help promote a prediction on how, where, and when he will strike (or hide).

4.4.12 Proxemics

As a key skill in human profiling, proxemics helps Soldiers identify dangerous, friendly, or interesting people based on their proximity to other people, objects, or events. Proxemics also applies to how people (and crowds) react when approached – they may move away (proxemics "push") or they may move towards (proxemics "pull"). In addition to obvious battlefield training situations where proxemics apply, the team identified areas to employ proxemics on fellow Soldiers or friendlies during training. For example, during collective task training, a unit

leader might determine who is comfortable with one another during certain exercises or who is reticent to engage with others.

4.4.13 Autonomics

Autonomics involves assessing the observable and measurable physiological signals given off by a person. Autonomics helps Soldiers by providing evidence that supports a reasonable conclusion. For example, during *Urban Operations 1*, if a marketplace vendor that the Soldiers know and trust is asked a question and begins to sweat nervously, the Soldier should be able to recognize this as an anomaly.

4.4.14 Avoid Thinking Traps

The team inserted the avoid thinking traps skill in lessons that require Soldiers to complete an exercise about which they may not feel particularly confident or motivated. Counterproductive thoughts may impair overall performance and therefore need to be identified early. Soldiers then need to correct the negative thoughts in order to move on with the exercise. For example, Soldiers may feel apprehensive about the *Confidence Obstacle Course* and need to suppress and overcome their doubts.

4.4.15 Goal Setting

The team found goal setting was a relatively universal skill to use because goals are essential to completing tasks or exercises, no matter how small they may be. The team inserted this skill in situations where it assisted in pushing Soldiers to accomplish objectives by providing them with purpose, motivation, and direction. By striving to achieving goals that they have set, Soldiers will be another step closer to accomplishing their overall objective. For example, the objective of taking the APFT is to pass by performing up to the standards for each event. If test scores are not as high as desired, this offers an opportunity for Soldiers to set new goals in order to shape future physical fitness training and work to improve themselves. During collective tasks, after establishing a plan, the unit leader must set clear goals to enable the unit to better perform towards the end objective.

4.4.16 Detect Icebergs

The team inserted the detect icebergs skill in lessons that require Soldiers to face situations that may fuel out-of-proportion emotional responses. It is important to identify any foundational, core beliefs in themselves and others that could hinder the task at hand. For example, while conducting negotiations, participants must be aware of how their beliefs and core values influence their perception of the parties involved. Knowing what "pushes their buttons" will give them greater control over their own emotions and reactions while negotiating.

4.4.17 Activating Event, Thoughts, and Consequences

Activating event, thoughts, and consequences is relevant to lessons that require Soldiers to face a challenging event in which they should have greater control over their emotions and reactions. The value of this skill is in encouraging Soldiers to quickly understand how their thoughts and reactions to an activating event is within their control. Further, this understanding can impact the actions they take and subsequent consequences. For example, in *Urban Operations 1*, Soldiers should mentally prepare for the possibility of a threat (the activating event) before entering and

clearing a room. During *Weapons Training-Hand Grenades*, Soldiers need to understand that if they make mistakes while employing live grenades (activating event), their subsequent thoughts should be aligned to quickly create the best consequence.

4.4.18 Heuristics

Heuristics applies to most situations where other ASA skills are involved. Heuristics are tactical shortcuts that enable Soldiers to make use of available information to draw reasonable conclusions about a situation. Heuristics was inserted when Soldiers were required to use their observational skills to make an informed decision. For example, during *Urban Operations 1*, Soldiers must synthesize information gathered through the use of such ASA human profiling skills as kinesics, proxemics, and autonomics as indicators of human activity to determine intent.

5 POI Tradeoff Analysis

The study team identified various courses of action (COA) for leveraging the Squad Overmatch ITA for training HPE skills to include four COAs for integrating HPE skills into training courses. The following sections describe these COAs and the criteria used to evaluate them.

Regarding the POI tradeoff analysis, the study team recommends COA3. As the reader will see below, this course of action includes revising two lessons to provide foundational HPE training and augmenting 16 other lessons to provide reinforcement and practice throughout OSUT.

The POI tradeoff analysis is depicted in part in Table 7 (the full table is located in Annex A). The courses of action evaluated and the criteria used to evaluate each one are described in the following sections.

5.1 POI Courses of Action

The study team defined several COAs to integrate resilience, performance enhancement, and ASA into Infantry OSUT. Table 4 shows the COAs to achieve recommended changes to the POI OSUT course. They range from providing basic instruction in HPE skills with no reinforcement in subsequent lessons (COA1) to comprehensive HPE skill injection and additional training for instructors (COA4).

Table 4. Courses of Action for POI Tradeoff Analysis

Course of Action	Summary	HPE Foundation training	Integrate performance enhancment	Resilience training	Situation awareness training	Advanced instructor training
1	Soldiers receive basic instruction in HPE, but does not reinforce this HPE instruction in other OSUT lessons.	X				
2	Provides HPE instruction integrated with all appropriate lessons within the POI, but does not provide foundational instruction upon which the integrated instruction would build.		X	X		
3	Provides the foundational instruction and integrates HPE instruction throughout all appropriate lessons.	X	X	X	X	
4	Adds advanced instruction in HPE to train instructors as SMEs in the HPE material.	X	X	X	X	X

- COA1: Add foundation training only by replacing two lessons (all other lessons remain unchanged, and instructors rely on existing training and experience but receive no additional training):
    - *Maintain Situational Awareness (Every Soldier is a Sensor).* Replace with an introductory lesson to Advanced Situational Awareness similar to the foundational training presented in the FY14 and FY15 Squad Overmatch demonstrations.
    - *Resilience Training for Basic Combat Training (BCT/OSUT).* This lesson will be updated to include foundational resilience skills that will be reinforced throughout OSUT.

- COA2: For each of the 16 lessons analyzed and annotated, briefly introduce and show how to apply HPE skills through instructor comments and focused AARs (where applicable). Other than the brief introductions they receive throughout OSUT, no lessons are wholly dedicated to teaching HPE skills. Instructors rely on existing training and experience but receive no additional HPE training. Some of the lessons (*Field Training Exercise (11B)*) have elements of live training that can leverage several of the foundational components of the ITA (scenarios, technology, focused AARs).

- COA3 (COA1 + COA2): Includes the two updated lessons in foundation training (described in COA1) and leverages what is trained in those two lessons by practicing and reinforcing HPE skills in the same 16 lessons referenced in COA2. Instructors rely on existing training and experience but receive no additional HPE training. In *BTT 3: Buddy*

Team Live Fire, COA3 affords Soldiers the opportunity to practice and apply breathing techniques and skills that were developed in the two foundational lessons to remain focused and calm before and during kinetic events like movement under direct fire.

- COA4 (COA3 + Advanced Instructor Training): Includes all aspects of COA3 and further requires that all drill sergeants and OSUT instructors receive Master Resilience Trainer (MRT) and ASA Basic (ASA-B) training. (This study did not evaluate the benefits that would be received from having drill instructors receive the full ASA-Master Trainer course.) Having more knowledgeable and experienced HPE instructors enables them to tailor their comments and instructions to meet Soldiers' specific training needs and learning styles.

5.2 POI Evaluation Criteria

Each course of action described above was evaluated across several criteria to determine its HPE training effectiveness. The criteria were selected to concisely represent all of the HPE skills listed in Appendix D. The team reviewed additional sources (such as FM 6-22, Leader Development) to ensure they addressed the Army leadership attributes as well. The evaluation criteria are listed below in Table 5. The table also provides a mapping to HPE skills and a brief description of corresponding abilities and skills that are acquired through education, training, and experiences.

Table 5. Mapping of evaluation criteria to HPE skills

Evaluation Criteria	HPE Skill Mapping	Description
Leadership	Avoid Thinking Traps Detect Icebergs Problem Solving Put It in Perspective Real –time Resilience Character Strengths Strengths in Challenges Assertive Communication Active Constructive Responding and Praise Hunt the Good Stuff Building Confidence Attention Control Goal Setting	Multi-skilled, Broad Knowledge, Strong Moral Character, Optimism, Optimal Allocation & Use of Resources, Controlled Behavior, Vision
Critical Thinking	Avoid Thinking Traps Problem Solving Put It in Perspective	Analytical and Problem Solving, Reasoning, Mental Games,

Evaluation Criteria	HPE Skill Mapping	Description
	Attention Control Integrating Imagery	Objective and Putting it in Perspective
Decision Making	Activating Events, Thoughts, and Consequences Avoid Thinking Traps Put It in Perspective Attention Control Integrating Imagery	Executable, Avoiding Thinking Traps, Pragmatic, Feasible, Judgment, Best Course of Action
Shared Understanding (Communications)	Avoid Thinking Traps Detect Icebergs Problem Solving Put It in Perspective Assertive Communication Active Constructive Responding and Praise Attention Control Goal Setting	Assertive/Clear/Concise/Complete Information Delivery, Steady under Pressure Communications, Using Available Sources and Passing Information Before and When Asked
Resilience Techniques (Self-Regulation and Stress Management)	Detect Icebergs Put It in Perspective Real –time Resilience Character Strengths Strengths in Challenges Active Constructive Responding and Praise Hunt the Good Stuff Building Confidence Attention Control Integrating Imagery	Awareness, Focus, Emotional and Physical Energy Management in Normal and Complex Situations, Stress Tolerance, Impulse Resistant
Individual and Crowd Behavior Profiling	Heuristics Proxemics Autonomics Kinesics	Recognizing and understanding human (individual and crowd) expression (voluntary and involuntary facial expressions, gestures, mannerisms) as indications of activity and intent
Natural and Man-made	Heuristics Geographics Atmospherics	Recognizing and understanding natural and man-made

Evaluation Criteria	HPE Skill Mapping	Description
Environment Profiling		environment as indications of human activity and intent

5.3 POI Tradeoffs

Table 7 depicts an excerpt from the tradeoff analysis for education including the COAs described in section 5.1 and the attributes discussed in section 5.2. The full table is located in the POI Tradeoff Analysis section of Annex A.

The tradeoff analysis is based on a five-point qualitative scale for each criterion. Refer to Table 6 for an explanation of the five-point qualitative scale. A value of "1" indicates that the corresponding COA does not train the given evaluation criteria specifically or indirectly, whereas a value of "5" indicates the presence of specific and effective training of the criteria as well as quality reinforcement for long-term retention. These values are summed across all the criteria under the Total Values column to indicate which COA is the most effective in training (*Important Note: The ratings in each COA row of Table 7 do not sum to the quantity in the "Total Values" column because not all criteria are shown here. Refer to the full table in the POI Tradeoff Analysis section of Annex A for all of the criteria)*. Each number represents a qualitative assessment of training effectiveness based on SME feedback and data gathered from previous Squad Overmatch training events.

Table 6. Explanations of rank values (from Table 7 POI Tradeoffs)

Scoring Key	
1	Attribute is not taught or practiced in 11B10-OSUT
2	At least one lesson provides basic instruction on some of the aspects of this attribute
3	Multiple lessons provide basic instruction on multiple aspects of this attribute
4	Multiple lessons provide opportunities to learn and practice most aspects of this attribute
5	Multiple lessons provide opportunities to learn and practice all aspects of this attribute

In general, starting with COA1 and progressing to COA4, each COA is marginally more effective at training HPE skills than the previous one. COA1, with two lessons dedicated to focused foundational instruction, received the lowest rating in the "Total Values" column of Table 7. Recall that, in COA2, trainees were introduced to and shown how to apply HPE skills in each of the 16 lessons. COA2 received a slightly higher rating than COA1. This reflects that Leadership, Resilience Techniques, and the other evaluation criteria represent perishable skills that are most effectively learned through continual practice (vice a single concentrated course with no reinforcement). For example, under the "Resilience Techniques" criterion, COA1 received a "2", whereas COA2 received a "3". The terms and concepts of self-regulation (Put It in Perspective, Energy Management, Real-time Resilience, etc.) are taught in COA1, but without

COA2's in-stride reinforcement strategy of explaining techniques throughout multiple lessons, the foundational HPE skills go unpracticed.

Table 7. POI Tradeoffs (Partial)[3]

Decision Matrix Attributes	Learning Benefits						Total Values (sum of values from all 7 attributes)	Man-Hours Required for Revising Training
	Leadership	Optimism, Optimal Allocation/Employment of Resources, Controlled Behaviors	**Resilience Techniques (Self-Regulation & Stress Management)**	Focus, Emotional and Physical Energy Management	**Natural and Man-Made Environment Profiling**	Recognize and understand environmental cues as indications of activity and intent		
COA1 (Foundation only)	2	These skills require practice to discover opportunities to use them.	2	These skills require practice to discover opportunities to use them.	3	Basic instruction in the six domains of ASA at least teaches the vernacular, but practice is needed to understand them.	19	91 hours
COA2 (HPE skill Integration)	3	These skills are somewhat natural and do not require deep foundation training, just practice over time.	3	Some of the techniques could be explained on the fly and understood through light practice.	3	With CVIT ASA instruction, students have a training and assessment tool.	22	3247 hours
COA3 (Foundation + Integration for all)	3	The foundation lesson provides opportunities to learn and understand what qualities and skills are needed for leadership – these are reinforced in subsequent lessons but offer limited opportunities for practice.	4	Foundation with practice and reinforcement will train the basic techniques adequately.	4	Basic knowledge of the six ASA domains coupled with reminders and illustrations from the instructor throughout OSUT would provide the repetition and practice needed to become proficient.	27	3298 hours
COA4 (Full MRT and ASA-B courses added; HPE integration)	4	OSUT does not afford significant opportunities for practice.	5	All of the self-regulation techniques will be learned with opportunities to practice.	5	Full training with reinforcement would fully equip the Soldier before entering the battlefield.	34	4658 hours

[3] See POI Tradeoff Analysis section in Annex A for complete table.

The final COA (COA4) delivers the greatest training benefit because it uses instructors that have been trained in the full ASA-Basic and CSF2 MRT courses. However, the study team considers COA3, which includes two re-purposed foundational lessons and multiple in-stride insertions throughout all of OSUT, to be the most cost-effective approach.

Regarding the cost of each COA, re-writing the two lessons in COA1, 17 man-hours per academic hour is required for new lessons. To revise the 16 lessons in COA2, 10 man-hours per academic hour are needed. For all of the COAs, it is assumed that any change in lesson plans will result in the POI being revised which requires about 40 man-hours. The numbers of hours calculated in the last column of Table 7 were derived from combinations of these values from the Estimated Time Values chart found in the Training and Education Development—Enterprise Workload Management Process version 5 Appendix 2.

As discussed above, COA3 offers a significant increase in training benefit, because it establishes a foundation in HPE skills *and* reinforces those skills in multiple lessons. When considering man-hours of development and revision, changing the 16 lessons proposed in COA2 requires a sizeable time investment (3,247 hours). The 91 hours associated with rewriting two lessons in COA1 are small by comparison, but the effective training value of COA2 results from the in-stride reinforcements provided. COA2 clearly represents a considerably large (training revision) investment over COA1. By contrast, the difference between COA2 and COA3 is small, especially when considering the substantial improvement in training capability. The large increase in cost (over 40%), in addition to the logistical changes, associated with COA4 arguably outweighs the training benefit.

6 Home Station Unit Training Tradeoff Analysis

One of the most promising methods for reaching a large number of Soldiers with HPE-enhanced training is by injecting HPE skills and greater realism into home station unit training. As discussed earlier in this report, HPE skills are perishable and require continual reinforcement. The recurring nature of unit training provides just that opportunity. This section discusses several COAs for how to implement the Squad Overmatch ITA at home stations.

For the unit training tradeoff analysis, the study team recommends the corresponding COA2. This course of action enriches unit training of collective tasks by training NCOs within the unit to be expert HPE instructors and uses the ITA with tailorable and scalable scenarios to meet any unit's training requirements.

6.1 Home Station Unit Training Courses of Action

Three courses of action for evaluating the benefits of implementing the ITA in regular home station unit training are presented below, and a comparison of the components included in each COA is presented in Table 8. All three COAs describe methods of fielding the graduated SET model. In other words, they include a direct instruction phase (crawl), a virtual gaming and/or immersive scenario rehearsal and practice phase (walk), and a live application phase (run) with technology to support HPE training cues that each build upon one another. All three COAs incorporate scenarios that reinforce HPE skills and include common battlefield stressors. Focused AARs are used in all three COAs to review and substantiate HPE skills.

Course of Action One (COA1): Basic materials and limited equipment available for units; Training conducted by available NCOs within unit.
COA1 is the simplest and least costly solution. A team of NCOs within each unit is assigned to retrieve and execute the Squad Overmatch Training Support Package (TSP) without having any HPE background or training. They run the entire training event including planning, coordination, and direct training.

a. Planning and Coordination
    i. There is no pre-requisite training for instructors within unit.
    ii. A TSP is produced that contains all job aids and training materials as well as detailed instructions regarding the planning, coordination, and execution of training. The TSP is made available on the Army Training Network (ATN).
    iii. Multiple scenarios and shorter vignettes are developed to include different collective tasks and events enabling trainers to tailor training events to requirements.
    iv. The Company commander produces training requirements and tasks a small group (to be referred to as the training group) of available NCOs to conduct Squad Overmatch training for the unit. The group accesses the TSP and reserves the needed facilities and equipment and then conducts and coordinates each of the training events.
b. Instruction

i. Training group instructs squads based on lesson plans provided in the TSP in whatever space is available.
ii. TSP provides links and references to additional resources (videos, training applications, such as the Captivating Virtual Instruction for Training (CVIT) application for ASA) but they are not used directly during instruction.
iii. Soldiers are encouraged to take good notes but are not given any job aids.

c. Virtual Practice
i. Squads practice instructed HPE skills by executing scenarios in a gaming environment.
ii. Scenarios are built with realistic storylines based on information from the Decisive Action Training Environment (DATE). Scenarios contain specific cues for reinforcing and evaluating HPE skills as well as several of the most common battlefield stressors as defined by WRAIR. The TSP includes a Road to War, OPORD, Fragmentary Order (FRAGO), Master Scenario Events List (MSEL), and talking points for Focused AARs for each scenario.
iii. Training group facilitates a verbal focused AAR at the end of each virtual training event using talking points from the TSP.
iv. A complete set of scenarios is produced covering a limited number of collective tasks.
v. At least one gaming computer lab at each home station is pre-configured with Squad Overmatch scenarios and operated by technicians to familiarize trainees and execute scenarios with guidance from training group.
vi. If no gaming lab exists, this phase is replaced with a sand table exercise based on provided scenarios.

d. Live Application
i. Squads apply what was learned and practiced in instruction and virtual phases by executing scenarios in an instrumented live training site.
ii. Scenarios are developed with realistic storylines based on information from DATE. Scenarios contain specific cues for reinforcing and evaluating HPE skills as well as several of the most common battlefield stressors as defined by WRAIR. The TSP includes a Road to War, OPORD, FRAGOs, MSEL, and talking points for Focused AARs for each scenario.
iii. One set of scenarios and a few short vignettes are developed to include a set of collective tasks and events.
iv. Training team verbally facilitates a focused AAR at the end of each scenario.
v. Each home station owns several limited sets of enhanced site technology that can be set up anywhere including personnel operated or ground-

emplaced non-pyro effects (e.g., gunshot sound effects or buried IED explosions), olfactory scent-generators, and a limited selection of location-specific props (e.g., fire barrel, tent, or market stand); other technologies such as wall-projected avatars are not used (instead role players are used). CACTF/MOUT must be reserved by training group based on availability or non-urban terrain could be used (e.g., wooded area or field with several location-specific props).

vi. Available Soldiers are used as role players with guidance from materials in the TSP. Soldier role-players have access to basic costumes/props and moulage.

vii. A complete set of Multiple Integrated Laser Engagement System (MILES) vests, halos, and casualty display devices are available for all Soldiers and some role-players as needed.

Course of Action Two (COA2): Multiple sites can support Squad Overmatch training at each home station with better quality equipment; Training is conducted by well-trained and qualified NCOs within unit.

A small team of instructors within each unit having MRT, ASA Master Trainer (ASA-MT), and Leader Development Course (LDC) training, is assigned to coordinate and conduct Squad Overmatch training. (LDC is a 40 hour course aimed at addressing the performance enhancement aspect of CSF2.) All gaming labs and CACTF/MOUT sites are pre-configured to be compatible with Squad Overmatch training for greater availability and higher fidelity of scenarios. The team of instructors must plan and coordinate the event and has the ability to scale and tailor training to satisfy training objectives.

e. Planning and Coordination

i. Each unit contains at least one NCO who has received MRT training, at least one NCO who has received ASA Master Trainer training, and at least one NCO who has completed the Leader Development Course (referred to collectively as the training team).

ii. A TSP is produced that contains all job aids and training materials as well as detailed instructions regarding the planning, coordination, and execution of training. The TSP is available on the ATN.

iii. The Company commander produces training requirements and tasks the training team to conduct Squad Overmatch training for the unit. The team accesses the TSP and reserves the needed classroom space, virtual training facilities, live training facilities, and equipment and conducts and coordinates each of the training events.

f. Instruction

i. Training team reserves classroom space with basic instructional capabilities (multimedia, white boards, television).

ii. TSP provides links and references to additional resources (videos, training applications such as CVIT for ASA) but they are not necessarily used directly during instruction.

iii. Job aids are provided to Soldiers in the form of reference sheets.

g. Virtual Practice
   i. Squads practice instructed HPE skills by executing scenarios in a gaming environment.
   ii. Scenarios are built with realistic storylines based on information from DATE. Scenarios contain specific cues for reinforcing and evaluating HPE skills as well as several of the most common battlefield stressors as defined by WRAIR. The TSP includes a Road to War, OPORD, FRAGOs, MSEL, and talking points for Focused AARs for each scenario.
   iii. Training team facilitates a verbal focused AAR at the end of each virtual training event using talking points from the TSP.
   iv. Multiple scenarios covering different battle tasks are available to allow units to tailor training events to their needs.
   v. All gaming computer labs at each home station are pre-configured with Squad Overmatch scenarios and are operated by technicians to familiarize trainees and execute scenarios with guidance from training team (if no gaming lab exists, at least one must be acquired).

h. Live Application
   i. Squads apply what was learned and practiced in instruction and virtual phases by executing scenarios in an instrumented live training site.
   ii. Scenarios are built with realistic storylines based on information from DATE. Scenarios contain specific cues for reinforcing and evaluating HPE skills as well as several of the most common battlefield stressors as defined by WRAIR. The TSP includes a Road to War, OPORD, FRAGOs, MSEL, and talking points for Focused AARs for each scenario.
   iii. Multiple sets of scenarios are developed to include different collective tasks and events enabling trainers to tailor training events to the training objectives.
   iv. Training team facilitates a focused AAR at the end of each scenario using recorded video captured by the cameras in the instrumented CACTF site.
   v. Several modular sets of enhanced site technology are available within each unit. All CACTF/MOUT sites at each home station are fitted with mounts or docks to enable enhanced site technology (MILES-enabled wall-projected avatars, non-pyro effects mounted on terrain or in buildings, and olfactory scent-generators) to be quickly installed/moved within the available site. Limited props and scenery are available to be set up by role players. CACTF/MOUT must be reserved by training team based on availability.
   vi. Professional role players with appropriate garb and cultural interactions and moulage effects for realistic injuries are on call for training.
   vii. A complete set of MILES vests, halos, and casualty display devices are available for all Soldiers and key role players.

Course of Action Three (COA3): One high-quality, dedicated Squad Overmatch site and qualified team of instructors per home station.
Each home station has one CACTF/MOUT site dedicated to Squad Overmatch training with permanently-installed technology to support HPE skill development. A team of instructors at each home station is wholly dedicated to the Squad Overmatch ITA. The team runs the entire training event for every unit that requests it including conducting classroom training, coordinating with simulation center personnel to execute gaming and immersive scenarios, and maintaining and running a dedicated live training site.

i. Planning and Coordination
    i. Dedicated team of instructors have received MRT training, ASA Master Trainer training, and have completed the Leader Development Course.
    ii. Dedicated instructors have basic training and expertise in modifying virtual scenarios to meet training needs of each unit.
    iii. Company commander requests training for unit by contacting dedicated Squad Overmatch instructors who then complete all necessary coordination, planning, and setup based on training requirements from company commander.

j. Instruction
    i. Dedicated instructors have received MRT training, ASA Master Trainer training, and have completed the Leader Development Course.
    ii. Classroom space is reserved with modern instructional technology (computer and projector, whiteboard, etc.).
    iii. Instruction includes use of multimedia (videos, PowerPoints, applications such as CVIT for ASA skills, etc.).
    iv. Job aids are provided to Soldiers in the form of pocket-sized reference booklets with key terms and concepts about HPE skills.

k. Virtual Practice
    i. Squads practice instructed HPE skills by executing scenarios in gaming and immersive environments.
    ii. Scenarios are built with realistic storylines based on information from DATE. Scenarios contain specific cues for reinforcing and evaluating HPE skills as well as several of the most common battlefield stressors as defined by WRAIR. The TSP includes a Road to War, OPORD, FRAGOs, MSEL, and talking points for Focused AARs for each scenario.
    iii. Dedicated instructors facilitate a focused AAR at the end of each virtual training event using replay capabilities built into gaming and immersive platforms and talking points provided in the TSP.
    iv. A range of longer mission scenarios and shorter focused vignettes covering different collective tasks are available to allow units to choose particular training events and tailor it to their needs. Individual scenarios are built to accommodate either a single squad or multiple squads to provide scalability.

v. All gaming computer labs and immersive suites at each home station are pre-configured with Squad Overmatch scenarios and are operated by technicians to familiarize trainees and execute scenarios with guidance from dedicated instructors (if no gaming lab or immersive suite exists, at least one must be acquired).

l. Live Application
   i. Squads apply what was learned and practiced in instruction and virtual phases by executing scenarios in an instrumented live training site.
   ii. Scenarios are built with realistic storylines based on information from DATE. Scenarios contain specific cues for reinforcing and evaluating HPE skills as well as several of the most common battlefield stressors as defined by WRAIR. The TSP includes a Road to War, OPORD, FRAGOs, MSEL, and talking points for Focused AARs for each scenario.
   iii. Multiple sets of scenarios and shorter vignettes are developed to include different collective tasks and events enabling trainers to tailor training events to training objectives.
   iv. Dedicated instructors facilitate a focused AAR at the end of each scenario using recorded video captured by the cameras in the instrumented CACTF site and reference notes projected onto a screen.
   v. One dedicated CACTF/MOUT site at each home station contains permanently installed enhanced site technology (MILES-enabled wall-projected avatars, non-pyro effects mounted on terrain or in buildings, and olfactory scent-generators) in addition to existing standard technology (high-speed networked cameras) and contains permanently installed props and scenery to replicate a specific geographic location as defined in DATE.
   vi. Professional role players with appropriate garb and cultural interactions and moulage effects and equipment for realistic injuries are on call for training.
   vii. A complete set of MILES vests, halos, and casualty display devices are available for all Soldiers and role players.

Table 8. Summary of Courses of Action for Home Station Unit Training

Training Phase	Aspect of Training Phase	COA1	COA2	COA3
Planning and Coordination	TSP available on ATN	x	x	
	Trainer(s) have MRT, ASA MT, and LDC training		x	x
Instruction	Trainer(s) are organic to unit	x	x	
	Classroom space required		x	x
	Multimedia available in the classroom			x
	Job aids provided for Soldiers		x	x
Virtual	Gaming POR used	x	x	x
	Immersive POR used			x
	Scenarios pre-installed and configured in simulation center		x	x
	Support from sim-center technicians needed		x	x
	Scenarios pre-developed with HPE cues and realistic stressors	x	x	x
	Various developed scenarios focus on different collective tasks to allow for tailorability		x	x
	Trainer conducts Focused AAR at end of event	x	x	x
	AAR uses video captured during exercise		x	x
Live	Scenarios pre-developed with HPE cues and realistic stressors	x	x	x
	Variety of developed scenarios focus on different collective tasks to allow for tailorability		x	x
	Trainer conducts Focused AAR at end of event	x	x	x
	AAR uses video captured during exercise		x	x
	Full suite of enhanced technology used in CACTF/MOUT site		x	x
	Permanent site dedicated to Squad Overmatch style training			x
	Use of professional role players		x	x
	Full suite of MILES gear (vest, halo, casualty display device) for all Soldiers	x	x	x
	Full suite of MILES gear (vest, halo, casualty display device) for all role players		x	x

6.2 Home Station Unit Training Evaluation Criteria

Each course of action described above was evaluated across several criteria in order to determine which would be the most effective. The criteria are as follows:

- Training Effectiveness
- Resource Availability
- Scalability
- Tailorability
- Startup Cost
- Continual Cost

Training effectiveness helps measure a COA's capability of training and accurately portraying HPE skills and helping Soldiers retain what they learn. Resource availability refers to how easy it is for a unit that requires training to reserve and use all of the necessary resources including instructors, time at the simulation center or appropriate CACTF/MOUT, site technology and equipment, etc. This criterion considers the amount of available resources in relation to the potential demand from units at the home station. Scalability examines the need to adapt to varying sizes of units. Are there enough computers in the virtual lab or MILES casualty display devices for a whole company or platoon to complete training within a reasonable period of time? Are scenarios built so that a single fire team could conduct training by itself if necessary? Tailorability evaluates how well training can be altered to meet the specific needs of a training element. If a squad needs to rehearse the "Enter and Clear a Building" collective task while practicing resilience techniques, can the virtual and/or live scenarios provided support that? Or, if a squad wants to solely focus on ASA skills and communication, can the scenarios also support that or any other combination?
The cost criteria cover two areas. The first is the initial startup cost for acquiring technology, building training materials and curriculum, and modifying PORs. Second, the continual cost incorporates ongoing site/equipment maintenance costs, the cost of training qualified instructors, and any cost that is repeated each time a training event is conducted (e.g., cost of blank ammunition, transportation for troops, producing job aids for troops, etc.)

6.3 Home Station Unit Training Tradeoffs

Similar to the POI tradeoffs described in section 5.3, the home station unit tradeoff analysis depicted in Table 10 is based on a five-point qualitative scale for each attribute. Refer to Table 9 for a summary of what each point indicates.

Table 9. Explanations of rank values (from Table 10. Home Station Unit Training Tradeoffs)

Scoring Key	
1	No significant improvement over current unit training
2	At least one of the classroom, virtual practice, or live application phases improves on current training model
3	More than one of the classroom, virtual practice, or live application phases improves on current model
4	More than one of the classroom, virtual practice, or live application phases improves on current model, and correlation across phases improves training as a whole
5	All of the classroom, virtual practice, or live application phases offer considerable improvement over the current training model

All of the COAs represent substantial investments in technology, resources, and time, but none can be justified without an improvement in training effectiveness. While COA1 offers improvements in HPE training through the use of well-designed scenarios, it receives a score of "2", because it lacks experienced and qualified instructors. COA2 and COA3 both require a team of instructors to complete MRT, ASA-MT, and LDC training in order to ensure the necessary level of proficiency with HPE skills as well as to ensure the trainers are able to conduct focused AARs throughout the training process. For this reason (and because of higher quality materiel), COA2 received a score of "4", and COA3, with dedicated Squad Overmatch instructors who themselves continually improve, received a score of "5".

Conversely, regarding resource availability, COA1 has less specific requirements for equipment, facilities, instructors, and scenarios. Any NCO could be expected to conduct training in a field using TADSS or a CACTF, with the TSP as a guide. This means that acceptable resources are more readily available, earning COA1 a score of "4". COA3, though, only has one set of instructors, training facilities, etc. which could easily be reserved by another unit when a unit seeks training. This earns COA3 a score of "1".

Looking at scalability and tailorability, COA2 scores high, because multiple MOUT/CACTF sites could potentially be used to support simultaneous squad exercises (scalability) and a larger variety of scenarios are developed enabling trainers to pick and choose those that support their own unit's training requirements (tailorability). Furthermore, having instructors organic to the unit means that they will be more informed on the training needs of the unit as well as the common errors or improvements that a unit should make and will be able to better address those needs (tailorability).

The cost criteria provided are given as rough rankings of cost for the purpose of comparison across COAs but should not be considered exact quantitative scores. For example, the startup cost score for COA1 is "4", but it is not necessarily two times cheaper than the startup cost for COA2, which received a score of "2". That being said, it is clear that COA1 is by far the least expensive option, whereas COA2 and COA3 both require a larger investment.

From the total values listed in the final (blue) column of Table 10, it is evident that COA2 offers the most beneficial course of action for the general cost with a score of "19" (over COA1's score of "15" and COA3's score of "16"). The study team, therefore recommends this blended

approach of acquiring multiple sets of technology, enhancing multiple CACTF/MOUT sites to support this type of training, and training NCOs within each unit to be able to conduct high quality HPE training.

Table 10. Home Station Unit Training Tradeoffs

Decision Matrix Attributes	**Training Effectiveness** How successful the training methodology and use of technology are in teaching Soldiers HPE skills	**Resource Availability** Given all equipment, facilities, and instructors, how likely/often will a unit be able to conduct training	**Scalability** Ability to scale training for different sized units	**Tailorability** Ability to tailor training plan and scenarios to requirements	**Startup Cost** Cost of buying and installing materiel, developing scenarios and instruction, etc.	**Continual Cost** Cost of maintaining equipment, facilities, qualifications of personnel as well as logistics and consumable materiel for each time training is executed	**Total Value** (Highest value indicates most desirable COA)
COA1 **(TSP and materiel available)**	2 Virtual and live scenarios integrate HPE training, but scenarios are brief and quality of training largely depends on unqualified instructors	4 Less demands for TADDS results in less training aids being purchased, but availability of facilities/ instructors is greater because requirements are less specialized	2 With less resources for virtual and live phases (variety of scenarios, site technology), less Soldiers can be processed	2 Smaller selection of pre-built scenarios and lack of trainer expertise makes it difficult to tailor training to needs	4 Less technology to acquire	5 Less facility and equipment maintenance; instructors come from within unit and have few facility needs	15
COA2 **(More resources available; Qualified trainers within unit)**	4 Virtual and live scenarios integrate HPE training and instructors are better qualified; in long term, instructors organic to unit can reinforce HPE skills anytime throughout the year	3 More specific equipment/ facilities/ instructors required, but multiple sites can be used, and each unit has instructors	5 Trainers attached to each unit desiring training, and multiple sites capable of supporting technology at each home station	4 Modular site technology and a variety of scenarios and vignettes makes it easier to build the training package desired	2 Significant amount of technology to acquire; all MOUT/CACTF sites need to be outfitted; training required within every unit	3 Equipment maintenance costs; use of facilities and transportation costs; cheaper labor (within unit); modular technology can easily be replaced/repaired	19
COA3 **(One dedicated trainer, site, and equipment set per home station)**	5 Virtual and live scenarios integrate HPE training and instructors become experts in this style of training allowing them to alter/improve training strategies over time	1 Only one training capability per home station	3 One facility limits throughput, but dedicated facilities and expert instructors can accommodate different sized units	5 A wide variety of scenarios coupled with dedicated instructors and virtual training makes tailoring training exercises very feasible	2 Cost of acquiring CACTF/MOUT; training dedicated instructors; design/development of many virtual and live scenarios; permanent installation costs	2 Difficult to replace/repair permanent installations; upkeep of dedicated facilities; payment for dedicated instructors; transportation costs	16

7 Recommendations

7.1 Recommendations for 11B10-OSUT

For Soldiers to understand, use, and benefit from HPE skills, the skills must be taught, used, and practiced. It is not enough to expose Soldiers to each skill once during basic training and then expect them to apply that skill later on in their careers. A more effective approach is to establish the foundation by introducing terminology and concepts in the classroom and reinforce the skills through repetition and integrated practice throughout a training course and in unit training throughout their career. The team's research focused on infantry training within the MCoE at Fort Benning, and after examining a range of courses, the team selected 11B10-OSUT Infantry, because it reaches all newly enlisted infantrymen.

7.1.1 Replace/Modify Lessons

Within OSUT, two lessons could be revised or replaced to provide the foundational instruction of HPE skills without adding academic hours to the POI. The first is 071-IRHOP157, *Maintain Situational Awareness / Every Soldier is a Sensor*. The standard from the terminal learning objective from this lesson reads:

> Demonstrate understanding, via instructor checks on learning, of key definitions and the role that all Soldiers play as information sensors in support of Battlefield Operations. Incorporate the lessons learned in this class into Tactical Operations.

The skills needed to accomplish this objective tie directly to ASA skills. The second lesson is 071-IRHON154, *Resilience Training for Basic combat Training (BCT/OSUT)*". The action statement in the terminal learning objective for this lesson states:

> Apply the fundamentals and evidence-based resilience skills to given scenarios that optimize resilience, mental fitness, and goal achievement.

This lesson is based on content from the CSF2 Program. The resilience and performance enhancement skills identified, not already taught in this lesson, could be added to the curriculum. Building on these foundational lessons, subsequent lessons throughout OSUT should provide opportunities to use and practice the HPE skills.

Of the 112 lessons in 11B10-OSUT, the team focused on 16 to annotate with examples of how to reinforce and use HPE skills in stride with other necessary tasks. Annex A contains the full lesson plans with red text explaining where and how to train or use particular HPE skills concurrently with steps or tasks in the lesson.

For each lesson, the team addressed several areas:

- Materials Required
- Instructor Guidance/Conduct of lesson
- Instructor Lead-in
- Standards in the Terminal and Enabling Learning Objectives

In addition to the annotations, the team also produced a job aid in the form of a pocket-sized notebook to help both students and trainers. The job aid provides quick-reference definitions of

each HPE skill as well as an entry for each of the annotated lesson plans listing the terminal learning objective standard, the primary HPE skills relevant to the lesson, and a brief overview of how the HPE skills are to be used in that lesson. A sample of the Human Performance Enhancement Job Aid can be found in Appendix B.

7.2 Recommended Home Station Unit Training Enhancements

In order to implement the ITA within recurring unit training, several changes in infrastructure and collective task training must occur. First, NCOs within units must receive training to become experts in HPE categories: at least one NCO from each unit must complete MRT training, another one must complete ASA-MT training, and another must complete LDC. This produces well-qualified trainers who also understand the training needs of their own unit and are able to tailor instruction accordingly. Secondly, training materials must be built in the form of a TSP. This TSP should include lesson plans for foundational and refresher classroom instruction of HPE skills; a wide variety of stress-based scenarios that integrate the use of HPE skills with a variety of collective tasks and allow for tailorable and scalable training; and an implementation guide for what resources to use in the classroom, how to set up and execute virtual training in the simulation center (including talking points for focused AARs), what technology must be acquired and set up within the desired CACTF/MOUT site, and generally how to plan, coordinate, and execute all aspects of training. Finally, in order to prepare home stations for this new training paradigm a considerable amount of technology must be acquired and configured. Simulation centers must have at least one computer lab with the Army's gaming POR pre-configured with the scenarios described in the TSP. Technologies, such as MILES vests/halos, and non-pyrotechnic effect equipment and moulage instruments, used for realistic battle effects and injuries, are currently available for training at home station. Casualty display devices and several sets of avatar-projection technology must be acquired. All CACTF/MOUT sites must be fitted with mounting systems for the avatars and effects to allow for re-configuration according to scenarios and training needs.

8 Conclusion

The Army of 2025 will be required to perform at a much higher level than the Army of today to protect vital U.S. interests. The world of 2025 will be increasingly complex and ambiguous, populated by more determined, elusive, and capable enemies. The education and training environment of Soldiers must adapt to that world starting now. The study team concludes that an integrated effort within the channels of education at the Centers of Excellence, combined with reinforcement at the unit level during home station training is vital to develop and retain HPE skills. The Army must use a common lexicon and training methodology within the ranks and among trainers, and must write and execute the training to induce a gradual layering of stress and tactical difficulty to ensure the Soldiers are forced to use the HPE skills they are learning. Soldiers cannot learn or master the HPE skills without a sound instructional strategy followed by focused practice and application. All aspects of training must support the development of HPE skills; otherwise, they will atrophy rapidly.

The guidelines for inserting HPE skill instruction into the OSUT lesson plans were a first step in this process. Within each lesson plan, the study team provided notes for instructors to serve as useful reminders about the importance and relevance of HPE skills to the lesson at hand. When the process of inserting HPE skills into OSUT is complete, this model should then be adopted by TRADOC to improve the Drill Sergeant School, and Staff and Faculty Instructor training courses along with school instructor certification programs. This underscores the importance of instructors as the first-line of contact that new Soldiers will have with HPE skills. Providing quality HPE training (train-the-trainer) as part of the qualifications and certifications to become an instructor will demonstrate the Army's commitment to training the human dimension. The Army University should be leveraged to ensure rigorous accreditation for education programs that have been updated to include training for HPE skills.

In addition to meeting the training objectives, injecting technologies to enhance the training environment must consider and adapt to the size of the unit being trained, from fire team through platoon and to company. Focusing on the small units will give the scenarios a better opportunity to play out and allow leaders of small units to use the HPE skill sets and make tactical decisions on their own. Because learning results not only from the training event itself but also from reflection, each training event should be followed by an AAR that requires Soldiers to examine not only their tactical performance, but also their decision making, information exchanges, ability to remain focused and manage energy, and awareness of their surroundings. Such an AAR allows trainers to assess HPE results, thus enabling the members of the unit, through reflection, to guide themselves according to goals set in previous HPE training environments.

As noted in the POI tradeoff analysis section, the study team recommends revising lessons in 11B10-OSUT as a starting point for teaching the human dimension and implementing the ITA in home station unit training. This integration of HPE skills throughout education and training will gradually transform and strengthen Army training as a whole.

For educational revisions in OSUT, the team recommends replacing two existing lessons to provide foundational training and augmenting 16 lessons to provide in-stride reinforcement of HPE skills throughout the POI. For unit training, the team recommends building a comprehensive TSP, configuring existing CACTF/MOUT sites and gaming computer labs to support stress-based,

HPE-enhanced scenarios, and requiring trainers within each unit to participate in complete MRT, ASA-MT, and LDC training.

The Army cannot delay the investment needed to align the education system with the current training environment to teach, train, and reinforce the HPE skillset. If this strategy is to succeed, the Army must embrace it in the same manner and vigor it did when instituting the Army Values. HPE must become a part of everyday life, introduced early in education and continually reinforced in training.

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Appendix A Annotated Lesson Plans

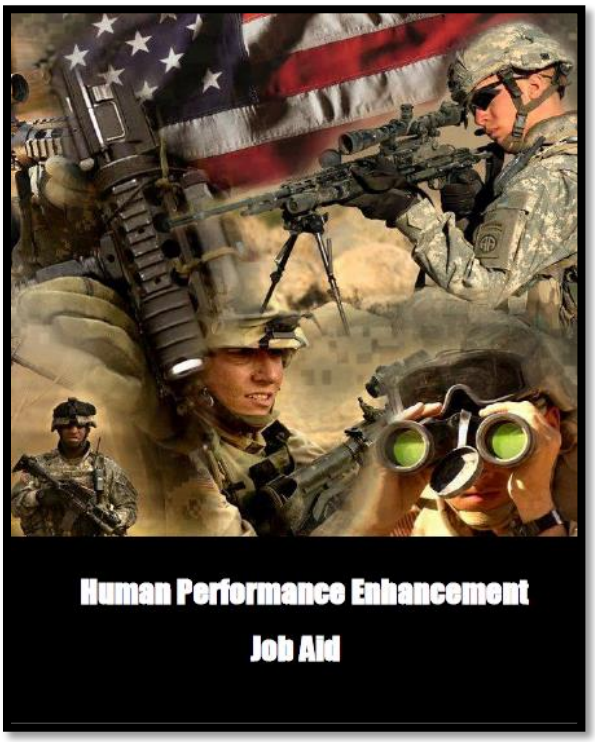
Annex A contains the full collection of annotated lesson plans. Table 11 shows the lesson plans included.

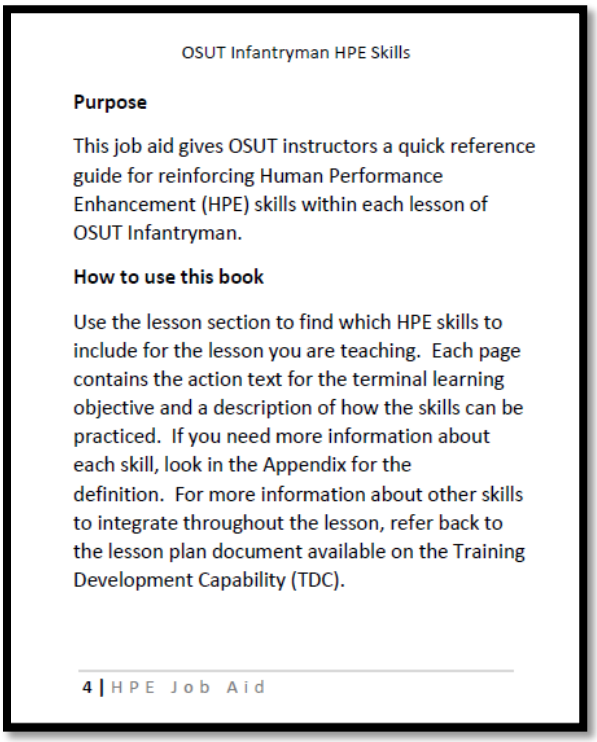
Table 11. 11B10-OSUT Lesson Plans Reviewed

Lesson Number	Lesson Name
071-IRGOC001	Field Training Exercise (11B)
071-IRHOH014	Urban Operations 1
071-IRHOP068	ITT (Foundation of a Tactically Proficient Soldier)
071-IRAOH004	BTT 2 Buddy Team Blank Fire
071-IRHOP129	BTT 3 Buddy Team Live Fire
071-IRGOJ018	INF OSUT RM 18 - Standard Qualification (Record)
071-IRHOA002	Physical Readiness Training
071-IRHOL026	Conditioning Obstacle Course
071-IRHOL033	Confidence Obstacle Course
071-IRHOL034	Confidence Tower
071-IRHOL150	Team Development Course
071-IRHOQ101	Weapons Training - Hand Grenades
071-IRGOG001	Basic Military Communications
071-IRHOO031	Conduct 6 Mile Foot March
071-IRHOK115	Eagle Skills Assessment (ESA)
071-IRGOJ009	INF OSUT RM 9 – Fundamentals of Marksmanship

Appendix B Human Performance Enhancement Job Aid

The *Human Performance Enhancement Job Aid* is a pocket-sized quick reference guide for Soldiers and instructors to use during the OSUT course. It provides a list of key skills and descriptions for all of the HPE skills as well as an entry for each lesson in OSUT integrated with HPE skills. These pages include the lesson title, the action text of the terminal learning objective, a list of the primary HPE skills to use in the lesson, and the instructor note that was written into the lesson plan. The job aid is intended to be printed as a pocket-sized 5”x 4” spiral-bound flipbook. Figure C-1 shows several sample pages. The complete document is included in Annex A.





OSUT Infantryman HPE Skills

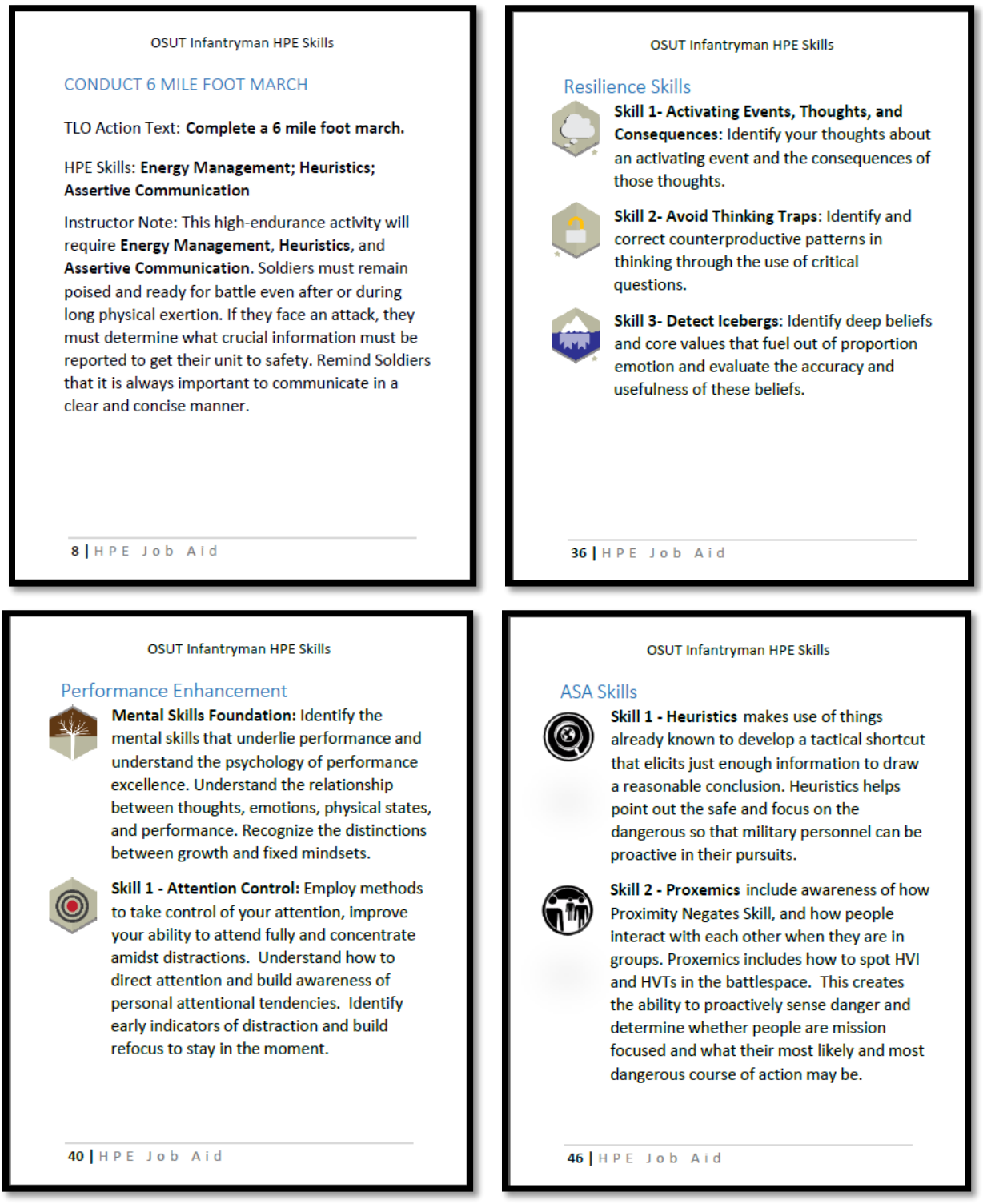
Purpose

This job aid gives OSUT instructors a quick reference guide for reinforcing Human Performance Enhancement (HPE) skills within each lesson of OSUT Infantryman.

How to use this book

Use the lesson section to find which HPE skills to include for the lesson you are teaching. Each page contains the action text for the terminal learning objective and a description of how the skills can be practiced. If you need more information about each skill, look in the Appendix for the definition. For more information about other skills to integrate throughout the lesson, refer back to the lesson plan document available on the Training Development Capability (TDC).

4 | HPE Job Aid



OSUT Infantryman HPE Skills

CONDUCT 6 MILE FOOT MARCH

TLO Action Text: **Complete a 6 mile foot march.**

HPE Skills: **Energy Management; Heuristics; Assertive Communication**

Instructor Note: This high-endurance activity will require **Energy Management**, **Heuristics**, and **Assertive Communication**. Soldiers must remain poised and ready for battle even after or during long physical exertion. If they face an attack, they must determine what crucial information must be reported to get their unit to safety. Remind Soldiers that it is always important to communicate in a clear and concise manner.

8 | HPE Job Aid

OSUT Infantryman HPE Skills

Resilience Skills

Skill 1- Activating Events, Thoughts, and Consequences: Identify your thoughts about an activating event and the consequences of those thoughts.

Skill 2- Avoid Thinking Traps: Identify and correct counterproductive patterns in thinking through the use of critical questions.

Skill 3- Detect Icebergs: Identify deep beliefs and core values that fuel out of proportion emotion and evaluate the accuracy and usefulness of these beliefs.

36 | HPE Job Aid

OSUT Infantryman HPE Skills

Performance Enhancement

Mental Skills Foundation: Identify the mental skills that underlie performance and understand the psychology of performance excellence. Understand the relationship between thoughts, emotions, physical states, and performance. Recognize the distinctions between growth and fixed mindsets.

Skill 1 - Attention Control: Employ methods to take control of your attention, improve your ability to attend fully and concentrate amidst distractions. Understand how to direct attention and build awareness of personal attentional tendencies. Identify early indicators of distraction and build refocus to stay in the moment.

40 | HPE Job Aid

OSUT Infantryman HPE Skills

ASA Skills

Skill 1 - Heuristics makes use of things already known to develop a tactical shortcut that elicits just enough information to draw a reasonable conclusion. Heuristics helps point out the safe and focus on the dangerous so that military personnel can be proactive in their pursuits.

Skill 2 - Proxemics include awareness of how Proximity Negates Skill, and how people interact with each other when they are in groups. Proxemics includes how to spot HVI and HVTs in the battlespace. This creates the ability to proactively sense danger and determine whether people are mission focused and what their most likely and most dangerous course of action may be.

46 | HPE Job Aid

Figure B-1. Sample Pages of the HPE Job Aid

Appendix C List of Abbreviations

AAR	After Action Review
AEWE	Army Expeditionary Warfighter Experiment
ALC	Advanced Leaders Course
APFT	Army Physical Fitness Test
ARI	Army Research Institute
ARL	Army Research Laboratory
ASA	Advanced Situational Awareness
ASA-B	Advanced Situational Awareness-Basic course
ASA-MT	Advanced Situational Awareness-Master Trainer course
ATN	Army Training Network
AWA	Army Warfighting Assessment
AWfC	Army Warfighting Challenges
BCT	Basic Combat Training
BTT	Buddy Team Tactics
CACTF	Combined Arms Collective Training
COA	Course of Action
CSF2	Comprehensive Soldier and Family Fitness
CVIT	Captivating Virtual Instruction for Training
DATE	Decisive Action Training Environment
DoTD	Directorate of Training and Doctrine
DSTS	Dismounted Soldier Training System
ESA	Eagle Skills Assessment
ETV	Estimated Time Value
FLETC	Federal Law Enforcement Training Center
FM	Field Manual
FRAGO	Fragmentary Order
FY	Fiscal Year
HPE	Human Performance Enhancement
HVI	High-Value Individual
HVT	High-Value Target
IBOLC	Infantry Basic Officer Leaders Course

ICT	(University of Southern California) Institute for Creative Technologies
IED	Improvised Explosive Device
IFAK	Individual First Aid Kit
ITA	Integrated Training Approach
ITT	Individual Tactical Test
LDC	Leader Development Course
LVC-G	Live Virtual Constructive - Gaming
MCoE	Maneuver Center of Excellence
MILES	Multiple Integrated Laser Engagement System
MOS	Military Occupational Specialty
MRT	Master Resilience Trainer
MOUT	Military Operations on Urban Terrain
MSEL	Master Scenario Events List
NAWCTSD	Naval Air Warfare Center Training Systems Division
NCO	Non-Commissioned Officer
OPORD	Operations Order
OSUT	One Station Unit Training
PAT	Process Action Time
PEO STRI	Program Executive Office for Simulation, Training, and Instrumentation
PME	Professional Military Education
PM TRASYS	Program Manager Training Systems
POI	Program of Instruction
POR	Program of Record
PTS	Post-traumatic Stress
RFI	Request For Information
SET	Stress Exposure Training
SLC	Senior Leader’s Course
SME	Subject Matter Expert
TADSS	Training Aids, Devices, Simulators, and Simulations
TDC	Training Development Capability
TRADOC	Training and Doctrine Command
TSP	Training Support Package

VBS3	Virtual Battlespace 3
WRAIR	Walter Reed Army Institute of Research

Appendix D Human Performance Enhancement Skills

Table 12. Resilience Skills

Resilience Skill	Description
Activating Events, Thoughts, and Consequences	Identify your thoughts about an activating event and the consequences of those thoughts.
Avoid Thinking Traps	Identify and correct counterproductive patterns in thinking through the use of critical questions.
Detect Icebergs	Identify deep beliefs and core values that fuel out of proportion emotion and evaluate the accuracy and usefulness of these beliefs.
Mental Games	Change the focus away from counterproductive thinking to enable greater concentration and focus on the task at hand. Mental Games are games that require your full attention, are hard and fun, and can be done within a few minutes.
Problem Solving	Accurately identify what caused the problem and identify solutions.
Put It in Perspective	Stop catastrophic thinking, reduce anxiety, and improve problem-solving skills by identifying the worst, best, and most likely outcomes of a situation.
Real-time Resilience	Shut down counterproductive thinking to enable greater concentration and focus on the task at hand.
Character Strengths	Identify your top character strengths and those of others and identify ways to use your strengths to increase your effectiveness and strengthen your relationships.
Strengths in Challenges	Identify the specific actions that flow from your strengths in challenges and in successes.
Assertive Communication	Communicate clearly and with respect. Use the IDEAL model to communicate in a confident, clear, and controlled manner. (I-Identify and understand the problem. D-Describe the problem objectively and accurately. E-Express your concerns and how you feel [when appropriate]. A-Ask others for their perspectives and then ask for a reasonable change. L-List the outcomes.)
Active Constructive Responding and Praise	Respond constructively to others to build strong relationships and use praise to build mastery and winning streaks.
Hunt the Good Stuff	Look for positive things to counter the negativity bias, to create positive emotion, and to notice and analyze what is good.

Table 13. Performance Enhancement Skills

Performance Enhancement Skill	Description
Mental Skills Foundation	Identify the mental skills that underlie performance and understand the psychology of performance excellence. Understand the relationship between thoughts, emotions, physical states, and performance. Recognize the distinctions between growth and fixed mindsets.
Attention Control	Employ methods to take control of your attention, improve your ability to attend fully and concentrate amidst distractions. Understand how to direct attention and build awareness of personal attentional tendencies. Identify early indicators of distraction and build refocus to stay in the moment.
Goal Setting	Identify, plan for, and commit to the pursuit of a goal that results in more optimal performance, sustained motivation, and increased effort. Understand the link between sources of motivation and goal setting; establish strategies that support goal attainment.
Building Confidence	Develop effective thinking skills to create energy, optimism and enthusiasm and help manage internal obstacles that hinder performance excellence. Know the sources of confidence building. Develop effective responses for counterproductive thinking and effective explanations for both setbacks and successes.
Energy Management	Use self-regulation skills to effectively modulate and restore energy in order to thrive under pressure. Understand how activation levels impact performance, and identify controllable versus uncontrollable factors that influence your energy. Practice deliberate breathing and learn to combat chronic sleep restriction.
Integrating Imagery	Mentally rehearse successful performances to program the mind and body to perform automatically and without hesitation. Understand the scientific basis of the brain-performance connection. Identify and practice the three factors that contribute to effective imagery.

Table 14. Learning Enhancement Skills

Learning Enhancement Skill	Description
Your Learning Mindset	Examine how motivation is the foundation for successful learning, and recognize attitudes that may limit success. Understand how learning changes your brain, and how a learning mindset affects your study strategy.
Make Study Effort Count	Establish the right study conditions to direct attention to immediate learning tasks, employing the Study Power Hour as an example study regimen to regulate study effort.
Take Effective Notes	Develop meaningful, reusable resources that facilitate comprehension and retention. Consider how listening and attitude affect the quality of notes, and develop a better note-taking style.
Learn With Your Peers	Form successful study groups and apply individual learning strengths effectively in a peer situation. Learn characteristics to seek in effective study partnerships and troubleshoot partnership pitfalls.
Plan and Prioritize Your Time	Work effectively toward academic goals and managing time. Understand how your time is during a typical week, and conquer procrastination through an action plan.
Remember What You Study	Improve knowledge retention through brain-based learning theory. Understand how memory works and why healthy habits are critical to academic success.
Attack Your Reading	Develop and use active processes to aid comprehension, knowledge retention, and efficiency. Apply the "Survey-Question-Read-Recite-Review" reading process.
Combat Your Tests	Become test-wise through planning, understanding questions, thinking effectively, managing energy, and embracing nerves to alleviate test anxiety and optimize test performance.

Table 15. Advanced Situational Awareness Skills

Advanced Situational Awareness Skill	Description
Heuristics	Use of things already known to develop a tactical shortcut that elicits just enough information to draw a reasonable conclusion. Heuristics helps point out the safe and focus on the dangerous so that military personnel can be proactive in their pursuits.
Proxemics	Awareness of how proximity negates skill and how people interact with each other when they are in groups. Proxemics includes how to spot HVI and HVTs in the battlespace.
Geographics	How terrain (specifically Anchor Points, Habitual Areas, and Natural Lines of Drift) create measurable and detectable patterns within any environment. Understanding how an opponent uses (or is familiar with) the Geographics of a battlespace can help promote predictive analysis on how, where and when he will strike.
Atmospherics	The sights, smells, tastes, and feel of an area. Atmospherics can include bullet holes, rubble, tattoos, colors, flags, bumper stickers, and graffiti. Atmospheric changes alone can indicate an impending attack. Operators can read subtle atmospheric shifts and assist in predicting that danger is pending.
Autonomics	Observable and measurable physiological signals given off by a person. For operators, Autonomics can help discern deception or aggression.
Kinesics	Body language or *paralanguage*, by which one can determine whether a person is angry, sad, violent, deceitful, or in other emotional states that can be assessed at ANY observable distance.