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## **So Others May Live: Enhancing Resilience and Performance for United States Coast Guard Helicopter Rescue Swimmer Candidates to Help Close the AST Body-to-Billet Gap**

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# So Others May Live: Enhancing Resilience and Performance for United States Coast Guard Helicopter Rescue Swimmer Candidates to Help Close the AST Body-to-Billet Gap

## Abstract

The Coast Guard is facing a shortage of entry-level Aviation Survival Technicians, more commonly known as helicopter rescue swimmers, due to high attrition from the training pipeline. Stretching thin a workforce which operates under some of the worst conditions on the planet is a recipe for injury or even loss of life. Positive and performance psychology offer tools to enhance candidates' performance and resilience in this high-stress environment to enable them to meet rigorous graduation standards. Informed by the military's recent focus on building resilience, traditional psychological skills training (PST) and mindfulness training (MT) offer empirically-grounded instructional paradigms to help address this shortfall of rescue swimmers. Situating PST and MT in the stress exposure training cycle already employed in many military settings offers a contextually relevant framework for applying these interventions. Specifically, I propose incorporating PST and MT into existing training in three places: 1) PREP, the five-day candidate preparatory program, 2) the web-based information portal for candidates, and 3) specific portions of the school. Introducing this targeted mental training as part of the rescue swimmer training pipeline should help increase graduation rates and produce more candidates prepared to live the rescue swimmer motto, "so others may live."

## Keywords

military, resilience, mindfulness, meditation, performance, coast guard, rescue swimmer, stress exposure training

## Disciplines

Cognitive Psychology | Industrial and Organizational Psychology | Other Psychology | Psychology | Social and Behavioral Sciences

So Others May Live:  
Enhancing Resilience and Performance for United States Coast Guard Helicopter Rescue  
Swimmer Candidates to Help Close the AST Body-to-Billet Gap

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A Capstone Project Submitted  
In Partial Fulfillment of the Requirements for the Degree of  
Master of Applied Positive Psychology

Advisor: Gloria H. Park

August 1, 2018

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This project is dedicated to all of my brothers and sisters who put their lives on the line every day so others may live and to those willing to put in the time, effort, and dedication required to earn this privilege.



(United States Coast Guard, n.d.)

**Table of Abbreviations**

<b>AST</b>	–	Aviation survival technician
<b>CD-RISC</b>	–	Connor-Davidson Resilience Scale
<b>CRM</b>	–	Comprehensive resilience model
<b>CSF2</b>	–	Comprehensive soldier and family fitness program
<b>DHS</b>	–	Department of Homeland Security
<b>DOR</b>	–	Drop on request
<b>DSM</b>	–	Diagnostic and statistical manual of mental disorders
<b>FFMQ</b>	–	Five facet mindfulness questionnaire
<b>FY</b>	–	Fiscal year
<b>GAT</b>	–	Global assessment tool
<b>IPT</b>	–	Integrated project team
<b>MAIA</b>	-	Multidimensional assessment of interoceptive awareness
<b>MBSR</b>	–	Mindfulness-based stress reduction
<b>MMFT</b>	–	Mindfulness-based mind fitness training
<b>mPEAK</b>	–	Mindful performance enhancement, awareness, and knowledge
<b>MRT</b>	–	Master resilience trainer
<b>MSPE</b>	–	Mindful sport and performance enhancement
<b>MT</b>	–	Mindfulness training
<b>PRP</b>	–	Penn Resilience Program
<b>PST</b>	–	Psychological skills training
<b>RCT</b>	–	Random-assignment, placebo-controlled trial
<b>SET</b>	–	Stress exposure training
<b>TAS</b>	-	Toronto alexithymia scale
<b>USCG</b>	–	United States Coast Guard



*So others may live*

-Rescue Swimmer Motto

### **Demand Signal**

*A rescue swimmer sits in the door of a helicopter as 50- to 70-foot waves (Gonzalez, 2016) roll and break beneath. He feels the cold lip of the deck digging into the back of his knees while a raft carrying three survivors surfs down the face of monstrous walls of water. As he descends from the helicopter, hanging above the waves on a thin metal cable, hurricane force winds drive him behind the helicopter like a kite. The water is so turbulent that he breathes a mixture of air and sea foam through his snorkel. After the first hoist, his body starts rejecting the seawater, and he begins to vomit. As he is hoisted out of the water for the final time, the wave he is riding drops out from beneath him, and the violent force of his harness catching his weight nearly bends him in half; the back of his helmet nearly touches his fin straps. Through severe muscle spasms, he renders emergency medical care to the three survivors with him in the cabin on their flight back to the hospital (Tougias, 2013).*

*Later in the afternoon (Sterner, 2018), another swimmer watches 12-foot surf throw logs into a cave like they are toothpicks. He knows the tide will shift in less than half an hour, causing the surf to double, but he also knows that a person, someone he has never met and will never meet again, is trapped in the cave. He swims inside the cave, fastens his survival vest to the survivor, and proceeds to fight for their lives. After several minutes of harrowing struggle, with help from his crew nearly flying their entire helicopter inside the mouth of the cave, he successfully frees himself and the survivor from the icy embrace of the ocean (Laguardia-Kotite, 2008).*

*In the evening, yet another swimmer is desperately clinging to the side of a mountain. An alder branch unclipped his harness as he rappelled across the nearly vertical slope to rescue a teenager trapped in the spray of a waterfall. His crew manages to drop the rescue basket, a stainless steel half-cage big enough for a person to sit in with his legs partially bent, next to the teen. While gripping the rock, the swimmer manages to calmly talk the survivor into the basket. Fearing that they won't be able to get the basket back to the swimmer, the crew slowly hovers towards him. The swimmer cannot see the cable behind him because he is facing the side of the mountain, but he feels it hit his helmet. Knowing this might be his only chance to get off the mountain alive, he spins, grabs the cable, and slides to the basket below (Helvarg, 2009).*

*In the inky black of a North Pacific night, a swimmer volunteers to deploy from his damaged helicopter to rescue four fishermen stranded in a life raft, clinging to their sunken vessel. The strength of the fishermen's hands holding on to their partially sunken ship is the only thing keeping the eight-foot swells from dashing their raft into nearby rocks. The damage to the helicopter means it will only be able to put the swimmer down to the water. His crew will not be able to recover the survivors, or him for that matter. He will have to tow each of the four survivors over 200 yards to shore, navigating a narrow path between rocks, rip currents, and a kelp bed while fighting eight-foot breaking surf. When his pilot asks if he can make the round trip four times, he responds "Hell, yes, let's do this!" (Gonzalez, 2016, p. 94). A mile of swimming later, he safely deposits the last of the four fishermen with waiting rescue crews on shore.*

These stories, drawn from various published accounts, represent just a small sample of what is asked of Coast Guard helicopter rescue swimmers. These individuals, officially known as Aviation Survival Technicians (ASTs), conduct hazardous missions in the face of continually

increasing challenges and risks (United States Coast Guard [ATTC], 1998). Rescue swimming is one of the most mentally and physically demanding jobs in the Coast Guard (Sanchez, 2010).

According to internal Coast Guard analysis, standard tasks for rescue swimmers include:

removing downed pilots from parachutes in the water, rescuing multiple survivors, rescuing panicked individuals, escaping from panicked survivors in water, and controlling these same panicked people both on land and in the water (United States Coast Guard [ATTC], 2016).

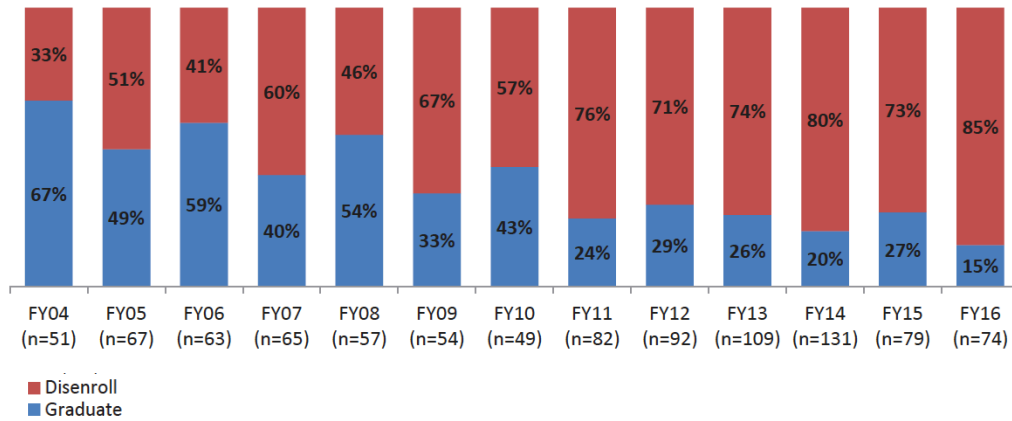
Highly decorated rescue swimmer Mario Vittone (Laguardia-Kotite, 2008) describes the job of a rescue swimmer as getting people out of whatever mess they managed to get into at the time (Vittone, 2018). He also notes the solitary nature of the job; once in the water, the outcome of a rescue rests squarely on the shoulders of the rescue swimmer (Vittone, 2018). According to the *Coast Guard Helicopter Rescue Swimmer Manual*, these individuals must be trained and conditioned to help people in distress in a maritime environment and must have the ability to perform for 30 minutes in heavy seas (United States Coast Guard, 2011). Popular press accounts describe the job as saving lives “in the harshest conditions imaginable” (Korten, 2016, p. 3). And one of the few researchers who has studied this population described them as the “hope when all else fails” (Sanchez, 2010, p. 2).

### **The Problem**

Currently, the Coast Guard is facing a shortage of entry level ASTs (AST3s) due to low graduation rates from initial training, known as AST A-School (United States Coast Guard [WRC], 2017a). As of April 2018, the Coast Guard had 357 active duty ASTs to fill a fleet-wide need of 391 (United States Coast Guard [RFMC], 2018). Any job, or rate, that is more than 5% undermanned is considered critical (Kelly, 2016). With an 8% gap, ASTs are nearly double the critical rate threshold. More troubling, the Coast Guard only has 87 AST3s to fill 122 billets,

resulting in a gap of 29% (RFMC, 2018). This gaping hole stems from historically low graduation rates from AST A-School. Graduation rates from fiscal year (FY) 14 to FY16 averaged 20% with a record low in FY16 of 15% (WRC, 2017a).

## AST A-School Graduation Rates



United States Coast Guard, Workforce Readiness Council. (2017). *AST graduation data* [Appendix E to aviation survival technician integrated project team program review and recommendations]. Retrieved from <http://cglink.uscg.mil/cc33ec38>

Historically, AST A-School has the lowest graduation rate of all A-Schools in the Coast Guard (WRC, 2017a). However, the graduation rate has not always been this low. In 2010, graduation rates averaged 50% (Sanchez, 2010), and over the last ten years of available data (FY06 to FY16), 855 candidates attended A-School and graduation rates averaged 31% (WRC, 2017a). The leading reason for disenrollment from school from FY06 to FY16 was quitting, known as dropping on request (DOR). Fully 25% of all candidates attending school over the last ten years DORed. The next leading causes of failure were medical disenrollment, followed by failures on several skills tests (WRC, 2017a). Typically, one to two students fail their initial PT test, and half of a class of 24 DOR or medically wash out within the first three weeks (United States Coast Guard [ATTC], n.d.)

**AST A-School**

Located in Elizabeth City, N.C. (Sanchez, 2009), this 24-week grueling course is both physically and mentally demanding (ATTC, n.d.). Many instructors label the course one of, if not the, hardest schools in the Coast Guard (Gonzalez, 2016; Sanchez, 2009; ATTC, n.d.). Similar to other military special-operation training programs, material provided by the A-School warns students that they will experience discomfort for long periods of time while attending school (ATTC, n.d.). Popular press accounts describe the school as a “waterlogged hell” (Korten, 2016, p. 1). And Vittone (2018) describes the school as “likely the most difficult physical and mental challenge you can imagine that doesn’t end in permanent disability” (p. 1). Merely refusing to quit in this challenging environment is not enough; students must pass benchmark tests, perform demanding tasks to standard, display technical aptitude, and exercise good judgement while under stress (United States Coast Guard [ATTC], 2017, n.d.).

The high levels of stress induced at AST A-School help identify those with the mental and physical strength to serve as helicopter rescue swimmers (Sanchez, 2009). Upon graduating, candidates will become the only members of their rotary-wing search and rescue crews capable of leaving the helicopter to deploy into some of the harshest conditions on earth (ATTC, n.d.). A-School seeks to simulate the worst case scenarios that could occur in unforgiving operational environments (Sanchez, 2010) that regularly include towering surf, hurricane force winds, sheer cliffs, caves, and sinking vessels (ATTC, n.d.). According to one instructor, A-School is demanding because “when lives are on the line, there is no room for almost and could have, only did and done” (Gonzalez, 2016, p. 308).

**Extant Analysis**

The most recent analysis of the shortage of AST3s comes from the Aviation Survival Technician Integrated Project Team (IPT). Chartered by the Coast Guard's Workforce Readiness Council in 2016, this team studied the process of training ASTs with the goal of recommending ways to increase the number of active duty ASTs (WRC, 2017a). The IPT defined the scope of their analysis as bounded on one side by the Coast Guard's recruitment effort and the other side by graduation from AST A-School (WRC, 2017a). The team found no single factor caused the gaping E-4 body-to-billet gap (WRC, 2017a). They identified multiple contributing factors, including a new training facility with enhanced simulation capabilities, the removal of a preparatory program from the training pipeline, and an update to the A-School's curriculum.

In conjunction with their analysis, the IPT recommended a series of solutions focused on improving candidates' physical preparation for A-School. These recommendations addressed three key stages of the training process: recruitment, preparation for A-School, and A-School itself. For example, the team recommended increasing recruitment advertising and marketing in "high potential markets," which they define as water-based populations, including swimming clubs, surfing competitions, water polo tournaments, and college swim meets (WRC, 2017a, p. B-1). Additionally, the IPT recommended an information portal containing a multitude of physical training resources including a 120 page, 16-week training plan with day-by-day training guidance as an aid for candidates in their preparation for A-School (United States Coast Guard [ATTC], 2018). Finally, the team recommended physical changes to the barracks, including better mattresses and air conditioning to help enhance students' physical resilience and ability to recover from training,

Low graduation rates from AST A-School are not a new problem facing the Coast Guard. While current attrition rates are at an all-time high, the Coast Guard performed a similar analysis of the AST training pipeline in 2006 to examine system-wide attrition (Petherbridge, Tipton, McMahon, & Morrison, 2006). This study asked many of the same questions addressed by the IPT: What variables lead to attrition? What changes might lead to less attrition while producing quality graduates (Petherbridge et al., 2006)? Similar to the IPT, this system analysis concluded that the school is rigorous but not impossible (Petherbridge et al., 2006). This report also recommended a series of physically-based solutions to better prepare candidates for school, focusing on improving candidates' physical conditioning and knowledge of rescue procedures prior to attending school (Petherbridge et al., 2006).

### **The Role of the Mind**

While physical preparation comprises a critical component of success in A-School (Gonzalez, 2016), it alone does not constitute complete or even adequate preparation. According to one instructor, some of the fastest swimmers are the first to wash out (Gonzalez, 2016). One former rescue swimmer describes physical preparation as the equivalent of bringing a sharpened pencil to a test. Candidates certainly will not complete the test without the pencil; however, the pencil must be paired with a strong and well-prepared mind to pass the exam (Wright, 2018).

At AST A-School, this mind must be prepared to deal with high levels of stress coming from multiple sources. Research conducted by Christine Sanchez (2009, 2010) as part of her doctoral dissertation offers a model for understanding the mental challenges encountered by AST A-School students. This model is based on qualitative and quantitative data gathered from interviews with A-School instructors and a longitudinal study of an AST A-School class. She conducted semi-structured interviews with 11 AST A-School instructors (28-60 years old) who

collectively had 176 years of AST experience and 50 years of AST instructional experience (Sanchez, 2009). She also followed one class ( $n = 11$ ) through an earlier iteration of the school which lasted 18 weeks. She was on site for all four months of training and observed training multiple times each week. The students ranged in age from 21 to 28, averaged two years of service in the Coast Guard, and had not previously attempted the school (Sanchez, 2010).

Sanchez's dissertation laid the foundation for future work in the AST A-School community. To build on her work, it is important to acknowledge its limitations alongside its contributions. First, as a doctoral dissertation, her manuscript did not receive the same level of peer review applied to a published journal article. Her interviews with instructors were all conducted at one time, preventing transcription and analysis of initial interviews prior to conducting further interviews. Additionally, the interviews merely represent the instructors' opinions regarding the stressors of A-School rather than an evaluation of the candidates' experience of the stressors (Sanchez, 2009). While Sanchez (2010) addressed one of these shortcomings in her follow-up work by investigating the experience of candidates directly, this study also had its limitations. Specifically, as a single case study, it provides descriptive correlational data but does not provide data that confidently generalizes to the entire AST A-School population. Additionally, none of the students voluntarily removed themselves from training, and the training occurred in a facility that is no longer in use. While far from perfect, these studies provide a foundation to build upon and represent two-thirds of known empirical studies specifically focused on AST A-School (Sanchez, 2010).

Sanchez (2010) identified seven stressors encountered by candidates at A-School, and I concur with her analysis based on my personal experience in AST A-School.



(1) Candidates face uncertainty in training. Training generally consists of up to two hours of demanding land-based evolutions that require high levels of strength, endurance, and work capacity followed by up to 4,000 meters of swimming in a 25-meter by 50-meter pool on Mondays, Wednesdays, and Fridays. Usually, Tuesdays and Thursdays are used for classroom instruction, lighter recovery work, and skills-based pool training sessions (ATTC, 2017). However, the specific duration, intensity, and exercises of each training session are revealed to the students as they perform them, resulting in high levels of uncertainty throughout the training day (Sanchez, 2010).

(2) Instructors induce stress both through their demeanor and specifically when simulating a panicked victim during water-based rescue simulations. Instructors apply increasing stress as training progresses (Sanchez, 2009, 2010).

(3) Candidates also experience stress resulting from a lack of oxygen when performing water-confidence drills (Sanchez, 2010). These exercises include 25-meter underwater swims, 25-meter sprints followed by 25-meter underwater swims, underwater knot tying, and buddy brick, an exercise in which two candidates push a pool brick across the bottom of the training center's 12-foot-deep pool. Only one student can surface to breathe at any given time, and the brick can only move when both students are touching it. Lack of air can quickly induce fear and panic (Gonzalez, 2016).

(4) Skills tests also induce stress for candidates (Sanchez, 2010). Failing to perform to standard on any one of these tests three times results in dismissal from school (ATTC, 2017).

(5) Personal life-demands, including managing money and maintaining relationships while far from home, add additional stress (Sanchez, 2010).

(6) Acute and nagging injuries caused by training and their potential consequences also add to the candidates' overall level of stress (Sanchez, 2010).

(7) Finally, time management adds an additional layer of stress to school. Candidates must find time outside of the training day to properly eat, recover, relax, sleep, study, and manage their personal lives. During their final interview, nearly 60% of candidates mentioned the mental aspect of training (Sanchez, 2010).

Internal and external analysis highlight the need for mental and emotional preparation in addition to physical preparation in order to successfully complete A-School (Robson & Manacapilli, 2014; Sanchez, 2010; ATTC, n.d.; WRC, 2017a). Anecdotally, rescue swimmers regularly describe the importance of mental preparation and perseverance. Vittone (2018) points out that the ocean never gets tired and can outlast even the most superbly conditioned athlete. He notes, "Deadlifting 400 pounds is not a job requirement. Staying cool under pressure is" (Vittone, 2018, p. 2). Wright (2018) also highlights mental preparation for school as being as, if not more, important, than the physical component. And Gonzalez (2016) notes that the mind can make or break students in training when they reach their physical limits.

According to Sanchez (2009), 100% of the instructors she interviewed classified mental skills as essential for successful performance as an AST. Sanchez's (2010) analysis of one particular A-School class found that higher levels of attentional control, self-confidence, emotional control, and social support positively correlated with successful completion of A-School. Additionally, AST A-School graduates surveyed by the IPT<sup>1</sup> indicated that mental toughness, discipline, and refusal to quit were the second most important factors contributing to their success, behind institutional support prior to attending school (WRC, 2017a). Furthermore,

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<sup>1</sup> 190 surveys were sent; 105 responses were received (response rate of 55.3%) (WRC, 2017a).

the IPT explicitly highlighted the need for increased mental and emotional preparation of candidates prior to A-School (WRC, 2017a). Finally, 25% of all candidates attending A-School removed themselves from training without failing any performance requirement: in other words, they decided to quit before meeting a challenge they could not physically overcome. As previously mentioned, quitting is the leading reason<sup>2</sup> candidates fail to graduate (WRC, 2017a).

Currently, the IPT (WRC, 2017a), the A-School (ATTC, n.d), and A-School instructors recognize the importance of mental and emotional preparation (Gonzalez, 2016). Wright (2018), a former rescue swimmer, highlights the lack of official Coast Guard information and resources dedicated to mental preparation for AST A-School. To address this gap, he wrote a book, *The Rescue Swimmer Mindset*, based on his personal experience but not empirical data, marketed to provide mental preparation tools for AST candidates. Robson and Manacapilli (2014) note that military training commonly relies on a sink-or-swim method with respect to mental and emotional training; training programs induce stress but rarely offer mental models or skills for coping with stressors and maintaining high level performance. Specifically, the only official mental or emotional preparation resources provided by the A-School consists of two sentences: “There is a multitude of informational tools available concerning mental toughness. Search the good ones out and utilize them...your mind will break before your body” (ATTC, n.d., p. 1).

Instead of relying on candidates to find their own mental and emotional preparation tools, the opportunity exists to offer them cutting-edge, empirically-validated tools drawn from the relevant positive and performance psychological literature. These tools would provide what the IPT calls for: “data driven, measurable, repeatable, and enduring” (Fosse, 2017, p. 2) solutions to

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<sup>2</sup> To date, researchers have not specifically asked candidates who DOR why they quit (Petherbridge et al., 2006; Sanchez, 2009, 2010; WRC, 2017a).

help mentally and emotionally prepare candidates for the rigors of AST A-School. Psychology, and particularly positive and performance psychology, has much to offer AST candidates.

### **Positive and Performance Psychology**

#### **Positive Psychology**

In 1998, the same year the Coast Guard began exploring mental training for ASTs<sup>3</sup> (ATTC, 1998), Martin Seligman, then president of the American Psychological Association, called for a new focus within psychology exploring what makes life worth living. He labeled this new discipline positive psychology (Seligman, 1999). In other words, positive psychology is “the study of conditions and processes that contribute to the flourishing or optimal functioning of people, groups, and institutions” (Gable & Haidt, 2005, p. 104). It aims to describe human potential, motivation, and abilities both accessibly and with scientific rigor (Seligman, 1999; Sheldon & King, 2001). This study of strengths and resilience focuses on building and nurturing what is best in people and society (Gable & Haidt, 2005; Seligman & Csikszentmihalyi, 2000).

Positive psychology defines three domains, or levels, of inquiry with respect to the good life: subjective, individual, and organizational. The first level values subjective experience in the past, present, and future consisting of states such as satisfaction, optimism, and happiness. The second level explores positive individual traits such as perseverance and talent. And the final level examines virtues and organizations that facilitate positive states and traits (Seligman & Csikszentmihalyi, 2000). Inherent in this structure is the theory that positive institutions develop

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<sup>3</sup> It is possible to trace the recommendation of mental and emotional preparation for ASTs back to a 1998 Coast Guard report advocating the creation of an advanced rescue swimmer school (ATTC, 1998).

and facilitate the expression of positive individual traits which then result in positive subjective experiences (Peterson, 2006).

The founders of positive psychology sought to supplement rather than replace traditional psychology (Seligman & Fowler, 2011; Seligman, Steen, Park, & Peterson, 2005). At the turn of the 21st century, psychology knew comparatively little about what leads to human flourishing and how to promote it (Sheldon & King, 2001). In contrast, psychology had created remarkably complex and successful taxonomies, measurements, and methods (both experimental and longitudinal) to understand causes of and develop interventions for distress, disease, and disorder over the last half of the 20th century (Peterson, 2006; Seligman & Csikszentmihalyi, 2000). The original proponents of positive psychology sought to reorient this scientific energy towards what makes life productive, fulfilling, and worth living in order to help people and groups thrive (Seligman, 1999; Seligman & Csikszentmihalyi, 2000). They argued that excellence and goodness are just as worthy of study as psychological dysfunction and disease (Peterson, 2006).

While this course correction can be considered new, inquiry into the topics addressed by positive psychology traces its roots back to ancient philosophers, religious leaders, and early psychologists (Gable & Haidt, 2005; Park-Perin, 2010). Chris Peterson (2006), one of the founders of positive psychology, described it as a field with “a very short history with a very long past” (p. 4). Since the time of Athenian philosophers in the West (Seligman et al., 2005) and Confucius and Lao-Tsu in the East, scholars have pondered what, if anything, can make people lastingly happier (Peterson, 2006). Religious leaders such as Jesus, Buddha, Mohamed, and Thomas Aquinas provided suggestions and prescriptions for developing well-being (Peterson, 2006). And from its foundation, psychology has been interested in the positive states and traits as illustrated by William James’ exploration of the healthy mind (James, 1899/1983). More

recently, humanistic psychologists such as Rogers and Maslow explored concepts such as what makes healthy people healthy (Gable & Haidt, 2005) but failed to produce substantial empirical evidence to support their theories (Seligman & Csikszentmihalyi, 2000). In addition to emphasizing the collection of empirical data, positive psychology provides a framework under which lines of previously isolated research and theory can coalesce to make a conscious argument for the importance of studying and quantifying what makes life worth living (Peterson, 2006).

### **Sport and Performance Psychology**

Performance psychology constitutes another emerging field that substantially overlaps with positive psychology. Performance psychology seeks to help people perform better and more consistently when quality of performance matters; it emphasizes enhancing performance by developing knowledge, skills, and abilities (Aoyagi & Portenga, 2010). Performance is defined in terms of both processes and the outcomes of those processes (Aoyagi & Portenga, 2010). Performance psychology draws from sport psychology, psychotherapy, and coaching. Most of performance psychology's work with high-risk professions such as members of the military and public-safety professionals is based on work in applied sport psychology (Hays, 2012).

The study of psychology and its relationship to sports dates back to studies of athletes' reaction times and audience influence on cycling performance at the turn of the 20<sup>th</sup> century (Brewer & Raalte, 2014; Meyers, Whelan, & Murphy, 1996). Initially, psychologists were primarily interested in the outcome of athletic performance (Brewer & Raalte, 2014). However, in the 1960s and 1970s, trained psychologists were hired to treat athletes' psychological problems. These practitioners identified themselves by their setting, but rarely addressed performance (Aoyagi, Portenga, Poczwardowski, Cohen, & Statler, 2012). The 1980s, 1990s,

and 2000s saw a return to the study of performance and the application of common performance-enhancement techniques to other domains, including business and the military (Brewer & Raalte, 2014). As a result of this bifurcation within the sport psychology community, two different branches formed: one focused on performance enhancement and the other focused on therapeutic interventions for athletes (Aoyagi et al., 2012). Aoyagi et al. (2012) pushed to fully differentiate these two branches by labeling the performance-oriented practice as “performance psychology” and apply the theories and interventions of this discipline to populations not specifically involved in sports (p.33).

### **Overlap**

Positive and performance psychology share a similar focus on “what works, what is right, and what is improving” (Sheldon & King, 2001, p. 216). According to Gould (2002), positive psychology describes what sport psychology has been doing since the 1970s. Specifically, the fields share positive foci in non-clinical populations (Brady & Grenville-Cleave, 2018). Both fields work with normal or super-normal populations. Positive psychology deliberately explores the functioning of regular or normal people (Seligman & Csikszentmihalyi, 2000; Sheldon & King, 2001). Similarly, performance psychology populations are generally physically and mentally healthy (Hays, 2012). Additionally, both disciplines investigate and build excellence and strengths. Specifically, positive psychology developed *Character Strengths and Virtues: A Handbook and Classification* as a “Manual of the Sanities” and counterpoint to the American Psychiatric Association’s *Diagnostic and Statistical Manual of Mental Disorders (DSM)* which systematically categorizes problematic behavior and what is wrong with people (Peterson & Seligman, 2004, p. 3). Similarly, performance psychology focuses on teaching and developing mental and emotional skills rather than correcting psychoemotional disturbances (Aoyagi &

Portenga, 2010). Tellingly, performance psychology also explicitly rejects a focus on the DSM, choosing instead to focus on teaching and building capacities (Aoyagi & Portenga, 2010).

Furthermore, positive and performance psychology share non-traditional psychological settings. Positive psychology interventions occur anywhere from elementary school classrooms (Seligman, Ernst, Gillham, Reivich, & Linkins, 2009) to Army Special Operations Forces selection courses (Eskreis-Winkler, Duckworth, Shulman, & Beal, 2014). Similarly, performance psychologists often provide their services outside of the therapeutic model in locker rooms, training rooms, and hallways (Aoyagi & Portenga, 2010). Finally, the levels of intervention identified by performance psychology parallel the levels of inquiry identified by positive psychology (subjective states, individual traits, and positive institutions) (Seligman & Csikszentmihalyi, 2000). Specifically, performance psychologists explore and intervene at levels ranging from individual performers or teams to entire units or departments (Aoyagi & Portenga, 2010). As positive psychology describes the interactions between these various levels (Peterson, 2006), so too does performance psychology. Often individual performance issues can only be permanently solved by higher-level changes such as team restructuring (Aoyagi & Portenga, 2010). Ultimately, both positive and performance psychology have as one of their central concerns the study and promotion of optimal human functioning.

### **Distinctions**

While positive and performance psychology have much in common, the disciplines diverge in a few key areas. First, even though sport, and by extension performance, psychology purports to develop strengths and focus on excellence, a review of the published sport psychology literature shows that the discipline still primarily investigates deficit-based concepts such as stress, anxiety, burnout, and fear (Brady & Grenville-Cleave, 2018). Additionally, at



times performance psychology hones in on narrow outcomes or results, leaving the well-being of the performer out of the equation. The goal becomes achieving a discrete performance or positive outcome in a specific task as evaluated by standard and external metrics (Aoyagi & Portenga, 2010; Brewer & Raalte, 2014). This focus explicitly appears in Aoyagi & Portenga's (2010) definition of performance as "a process of developing one's knowledge, skills, and abilities (KSAs) in a given performance domain and then recalling and demonstrating these KSAs during a discrete performance event" (p. 254). In contrast, positive psychology focuses on both global well-being and excellence, generally with respect to personality traits. This dual focus makes positive psychology an ideal discipline to guide mental training for prospective AST candidates. Being well and doing well do not necessarily have to be separate things. The Coast Guard will benefit from mentally tough, resilient ASTs who develop both the fortitude to graduate A-School and the capacity to maintain wellness throughout their military careers.

### **Positive Interventions**

Positive interventions are empirically validated exercises and activities designed to help people flourish (Seligman et al., 2005). These activities increase well-being away from zero and/or increase well-being through positive methods. Interventions that are positive in point of application focus on non-clinical individuals and groups; those that are positive in method develop good things instead of fighting bad (Pawelski, 2017).

Seligman et al. (2005) found early success with positive interventions designed to increase happiness, observing real and lasting change in individuals' well-being over a period of six months in a random-assignment, placebo-controlled experiment. Since this initial effort, many positive interventions have been found to raise subjective well-being, or individuals' holistic evaluations of their lives and emotions (Diener et al., 2017). A meta-analysis of 51

positive interventions by Sin and Lyubomirsky (2009) indicated that positive interventions significantly increase well-being (mean  $r$  effect size = .29). A second, stricter meta-analysis by Bolier et al. (2013) of 39 studies found similar significant increases in subjective well-being (composite effect size  $d = .34$ ).

Many positive interventions are brief, low cost, and frequently self-administered. These activities include performing random acts of kindness, spending money for others, writing about positive experiences, sharing positive experiences with others, counting one's blessings, and writing a gratitude letter. Additionally, more intensive programs such as hope and well-being therapy have been created (Diener et al., 2017). In a pilot study, hope therapy significantly increased participants' agency, life-meaning, and self-esteem while reducing symptoms of anxiety and depression (Cheavens, Feldman, Gum, Michael, & Snyder, 2006). And several studies of well-being therapy demonstrate that it can increase participants' senses of development, growth, purpose, and meaning and improve the quality of relationships with others. Additionally, it has been shown to reduce anxiety and depression in high-risk groups (Fava & Tomba, 2009).

Several factors increase the effectiveness of these interventions. Individuals who want to become happier tend to see more benefits. Additionally, those who believe subjective well-being can change, devote more effort to an intervention, believe in the efficacy of an intervention, and develop a continuing practice of the intervention show greater gains (Diener et al., 2017). Furthermore, variety within and among positive interventions tends to increase their efficacy (Diener et al., 2017). Finally, person-activity fit, or the degree to which an intervention matches an individual's personal characteristics, context, and values, is essential for the success of any intervention (Schueller, 2014).

### **Cognitive Behavioral Interventions**

Performance psychology also has a class of empirically tested interventions, most of which fall under the umbrella of positive interventions as defined above. Cognitive-behavioral interventions are generally considered the foundational interventions of sport psychology (Brewer & Raalte, 2014). These interventions teach techniques and skills to improve performance, including goal setting, self-monitoring, stress management, imagery, intensity regulation, and modeling (Brewer & Raalte, 2014; Meyers et al., 1996). These skills involve focusing on pieces of a performance under the athlete's control and on understanding and recognizing faulty thinking patterns (Moran, 2014).

A meta-analysis of 56 studies of cognitive-behavioral interventions found that they significantly increase athletic performance with an average effect size of 0.62 (Meyers et al., 1996). However, this analysis identified several limitations with the evaluation of these interventions. The integrity of treatment delivery – whether the treatment was delivered as intended – regularly was left unaddressed. Additionally, the athletes' reception of treatment was often unknown, and most researchers failed to investigate the long-term effect of the treatments studied. Finally, many of these interventions involved multiple components, and many studies failed to use research designs that isolated the effects of particular components within the larger intervention package (Meyers et al., 1996).

While limitations exist, positive interventions and their close cousin in the performance psychology literature, cognitive behavioral interventions, offer empirically-based tools to increase well-being and improve performance.

## Resilience

Building resilience has been the target of many positive and cognitive behavioral interventions because resilience contributes to performance and persistence in high-stress environments (Robson & Manacapilli, 2014) such as AST A-School. Below, I define this highly relevant construct, identify its building blocks, underscore that resilience can be developed through training, and explore several existing programs specifically designed to build resilience.

Currently, resilience is generally defined as the ability to rebound from adversity, grow in response to challenges (Reivich, Seligman, & McBride, 2011), and endure great hardship when necessary (K. Reivich, personal communication, February 11, 2018). However, psychologists have yet to adopt a universal and uniformly accepted definition of this construct. Accordingly, many different metrics and technical definitions of resilience exist (Britt, Sinclair, & McFadden, 2013; Park, Messina, & Deuster, 2017; Wald, Taylor, Asmundson, Jang, & Stapleton, 2006). Almost all definitions incorporate human strengths, disruption and growth, adaptive coping, and healthy functioning despite adversity (Vanhove, Herian, Perez, Harms, & Lester, 2016; Wald et al., 2006). In *Building Psychological Resilience in Military Personnel*, Britt et al. (2013) define resilience as “the demonstration of positive adaptation after exposure to significant adversity” (p. 4). This definition highlights the notion that resilience is a response that occurs as the result of a collection of traits rather than a singular trait (Sinclair, Waitsman, Oliver, & Deese, 2013). Demonstrating resilience is not an all-or-nothing proposition; it occurs on a spectrum (Taylor & Colvin, 2012). Specifically, the Coast Guard has conceptualized resilience as confidence in overcoming adversity and enjoyment of challenges (Mattiko, Barlas, Wessels, Pflieger, & Creel, 2013). The multitude of definitions and theories highlights the complexity of this construct

(Sinclair & Britt, 2013). Fortunately, there is greater agreement in the psychological literature about the factors that comprise the building blocks of resilience (Britt et al., 2013).

### **Protective Factors**

Resilience is made up of building blocks, or protective factors, which include both individual and situational variables. Resilient individuals demonstrate a range of physiological, emotional, and cognitive features in various combinations and to varying degrees (Whealin, Ruzek, & Vega, 2013). Promisingly, many of these characteristics can be developed through training (Reivich & Shatte, 2003).

Resilient individuals are self-aware. They understand their emotions, motivations, thoughts, values, and physiology and notice what is happening both internally and externally (Southwick, Bonanno, Masten, Panter-Brick, & Yehuda, 2014). Resilient people also self-regulate, or change their internal or external responses by altering thoughts, feelings, or actions if they are not adaptive to a given situation (Masten, 2001). Additionally, resilient individuals are mentally agile; they can think flexibly and change perspective. They are willing to try new approaches to problems and abandon patterns of thought that inhibit resilience (Reivich et al., 2011). Resilient people are also optimistic, which can be understood both generally as confidence that things will turn out well (Southwick & Charney, 2012a) and specifically as an optimistic explanatory style (Peterson & Steen, 2009). Explanatory styles describe the mental story an individual tells about an event. An optimistic explanatory style describes set-backs as temporary, sees them as specific to the setting of the adversity, and accurately evaluates responsibility for the set-back (Peterson & Steen, 2009). Furthermore, resilient individuals have senses of self-efficacy. They know their skills and abilities and have confidence that they can use them effectively in new situations (Masten, Cutuli, Herbers, & Reed, 2009; Southwick &

Charney, 2012b). Finally, resilient people connect with something larger than themselves. They have networks of supportive family and friends, and they have a sense of purpose or meaning (Southwick & Charney, 2012a).

In addition to individual traits, skills, and abilities, situational factors powerfully impact individuals' resilience (Jex, Kain, & Park, 2013). Often, resilience training programs succumb to the fundamental attribution error, a general bias towards overestimating the degree to which an individual's traits are responsible for her reaction to adversity and underestimating the significance of situational variables (Jex et al., 2013). Jex et al. (2013) highlight three powerful situational variables: social support, training, and military culture. Institutions can enhance resilience outcomes by facilitating and promoting stable relationships (Masten et al., 2009), offering training geared specifically towards enhancing resilience, and developing a culture that supports resilient behaviors (Jex et al., 2013).

The precise relationship between and among individual and situational protective factors remains unclear. Generally, factors tend to occur together and often have a cumulative effect (Wald et al., 2006). Many of these resources are likely fungible, meaning there are multiple pathways to resilience (Sinclair & Britt, 2013). Additionally, situational and individual resilience factors are likely compensatory. Greater individual resilience can compensate for challenging environments and vice versa (Jex et al., 2013). For example, an AST candidate who receives targeted mental skills training with strong social support could excel in water-confidence drills and skills tests just as a candidate with high levels of trait self-awareness and self-regulation does. While the candidates draw on different protective factors, they both rise to the occasion and excel in the rigorous A-School training environment.

## **Building Resilience**

While resilience is a naturally occurring phenomenon (Mancini & Bonanno, 2006), psychologists recently have developed interventions and programs designed to enhance resilience (Vanhove et al., 2016). These programs are based on the understanding that the abilities and resources that facilitate resilience can be developed, martialed, and used consciously (Reivich & Shatte, 2003). Instead of treating existing symptoms, resilience-building initiatives generally aim to develop knowledge, skills, and abilities to manage adversity and enhance wellness prior to encountering adversity (Vanhove et al., 2016). Current programs commonly emphasize developing individual protective factors over situational factors (Meredith et al., 2011).

Historically, the study of resilience originated with the exploration of childhood development in the face of adversity such as mentally ill or alcoholic parents or lack of economic resources (Britt et al., 2013; Wald et al., 2006). In the early 2000s the military underwent a “resilience renaissance” as part of increasing interest in studying the healthy functioning of adults in the face of adversity (Britt et al., 2013, p. 13). Due to this historical context, the majority of foundational research on resilience has relied on the evidence gathered by developmental psychologists (Wald et al., 2006).

A recent meta-analysis of 37 resilience studies in military and non-military organizational contexts found that these interventions have small but significant overall effects ( $d = .21$ ), improving well-being and performance while reducing psychological deficits after training (Vanhove et al., 2016). Importantly, the effect sizes found in adults closely mirrored those observed in children by Brunwasser, Gillham, and Kim (2009) ( $d = .11$  to  $.21$ ), supporting the generalizability of the core set of protective factors originally identified by developmental

psychologists. Additionally, Vanhove et al. (2016) found nearly identical significant positive effects of resilience interventions in military ( $d = .25$ ) and non-military ( $d = .26$ ) settings.

According to this analysis, the protective effects of resilience training hold across populations: children and adults, soldiers and civilians.

### **Specific Resilience Programs**

One of the largest and most comprehensive of the military's resilience initiatives is the Army's Comprehensive Soldier and Family Fitness (CSF2) program modeled on the University of Pennsylvania's Penn Resilience Program (PRP) (Lester, Harms, Herian, Krasikova, & Beal, 2011; Lester, McBride, & Cornum, 2013). PRP was designed to prevent anxiety and depression in children and young adults, and its curriculum focuses on a set of protective factors that contribute to resilience: self-regulation, emotional awareness, self-efficacy, optimism, problem-solving, and strong relationships. It is one of the most heavily researched programs that targets resilience and has been shown to significantly reduce depressive symptoms in children up to a year after the program ends (Brunwasser et al., 2009; Lester et al., 2013). Additionally, PRP provides a proof-of-concept for train-the-trainer methodology, a key component of distributing resilience training across a large population such as the entire Army (Lester et al., 2013).

Largely based on PRP, CSF2 is one of first Army-wide programs to address the need for psychological fitness (Lester et al., 2013). It incorporates evidence-based resilience factors to develop cognitive skills and resources proven effective in multiple settings. As a prevention oriented program, CSF2 helps soldiers build skills prior to encountering stressors (Lester et al., 2013). A large portion of the program focuses on meta-cognitive skill development to help soldiers recognize their thinking patterns (Lester et al., 2013). Additionally, the program is committed to ongoing assessment of its efficacy and alteration or elimination of ineffective or



harmful training components. Ultimately, CSF2's goal is to equip soldiers with the cognitive skills to manage emotions, think their way through problems, and ultimately thrive (Lester et al., 2013).

CSF2 is comprised of four components: the Global Assessment Tool (GAT), Master Resilience Trainer (MRT) Course, Comprehensive Resilience Modules (CRMs), and Institutional Resilience Training (Lester et al., 2013). The GAT, a 105-item questionnaire completed yearly by all soldiers not deployed to combat, measures psychological fitness (Lester et al., 2013). The MRT course, based on PRP and other empirically validated positive psychology concepts, teaches fundamental resilience skills and methods of teaching these skills to others. The goal of the program is to teach skills that promote well-being and performance (Lester et al., 2013). Designed in partnership with the University of Pennsylvania, MRT focuses on identifying thoughts and their consequences, understanding and developing adaptive explanatory styles, countering negative thoughts, and attending to positive events (Lester et al., 2013; Whealin et al., 2013). The CRMs consist of 24 online modules designed to meet the resilience training needs of individual soldiers (Lester et al., 2013). This component is still under development, and – to date – has not been found to have an impact on increasing resilience in soldiers (Lester et al., 2011; Lester et al., 2013) Finally, institutional resilience training focuses on incorporating resilience skills and concepts into military schools across the entire career cycle, from basic training to the most senior leadership schools. This component aims to shift the conversation across the entire Army to emphasize the importance of mental fitness (Lester et al., 2013).

The majority of the analysis available for CSF2 to date focuses on the efficacy of MRTs. A 15-month study examined eight brigade combat teams, four of which had a 1:100 ratio of

MRTs to soldiers. The other four teams were wait-listed and consequently had no MRTs. Soldiers took the GAT three times during the study, and researchers evaluated soldiers' mental health, behavioral indicators, and attrition from the Army (Harms, Herian, Krasikova, Vanhove, & Lester, 2013; Lester et al., 2013). Analysis found that the presence of MRTs caused no harm and "measurably improve[d] the psychological health of the force" (Lester et al., 2013, p. 214). However, this evaluation suffered from several limitations. First, it was primarily based on soldiers' self-report. Additionally, it was published as a technical report and, therefore, received no peer review. Furthermore, the evaluation focused on mental health diagnosis and diagnosis of substance abuse but did not directly address soldier performance (Harms et al., 2013). A second, cross-sectional study of 441 Army National Guard members found that these soldiers perceived MRT training as useful, and the skills learned buffered against increased levels of stress in these soldiers' lives (Griffith & West, 2013). However, the design of this study prevented any conclusions about causality, and it only used one measure of stressors and one measure of well-being (Griffith & West, 2013). The current evidence for the efficacy of MRTs is suggestive of positive outcomes, but far from conclusive.

### **Performance**

The military's shift towards prevention has moved a step further within the special forces community to focus on Human Performance Optimization. This approach recognizes that optimal performance results when resources match or exceed requirements (Deuster, Grunberg, & O'Connor, 2014). It argues for a shift in the conception of resilience from recovering to developing the ability to thrive by addressing weaknesses and developing strengths. This framework also promotes well-being as a way to optimize job performance (Park et al., 2017). This shift reflects a focus on sustaining health and capacity to perform at a high level (Park et al.,

2017). Human Performance Optimization advocates a proactive approach to the development of health and performance starting early in training and focused on specific and precise interventions (Park et al., 2017).

### **Stress Exposure Training Overview**

Stress exposure training (SET) is a targeted psychological intervention<sup>4</sup> widely used in the military, and particularly special forces (Robson & Manacapilli, 2014), to enhance performance prior to and during high-stress situations (Driskell & Johnston, 1998). SET consists of three stages: stress education, skills acquisition, and skills application. The first stage educates trainees about the body's natural response to stress and the stressors they are likely to encounter (Driskell & Johnston, 1998; Robson & Manacapilli, 2014; Whealin et al., 2013). The second stage teaches mental skills that directly support performance under the stress of a particular operational environment and facilitates practice and mastery of these skills in low-stress settings. (Driskell & Johnston, 1998; Robson & Manacapilli, 2014). The final stage of SET calls for the application of the skills in conditions that simulate the operational environment. This added stress teaches individuals how they react physically, mentally, and emotionally in high-stress environments. They also learn how long their reactions last, when they diminish, and how they subside. In this final phase, stress is added in a graduated manner because adding too much stress at the outset interferes with the learning process (Robson & Manacapilli, 2014).

While primary prevention targeted at building resilience generally has shown weak (Brunwasser et al., 2009) to no consistent effects (Bastounis, Callaghan, Banerjee, & Michail, 2016), targeted stress management interventions positively influenced psychological outcomes

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<sup>4</sup> Since SET in the military context targets healthy populations, it constitutes a positive intervention (Pawelski, 2017).

with effect sizes ranging from moderate to high (average  $d = 0.53$ ). These interventions diminished stress and anxiety and enhanced mental health, motivation, and perceived control at work (Richardson & Rothstein, 2008). These programs specifically target those individuals who need the training either because they have limited protective factors or because they are operating in particularly high-stress environments (Adler, 2013; Williams et al., 2004).

Currently, several special forces training programs include versions of SET designed to prevent or reduce declines in mental performance and decision-making that occur in high-stress and high-risk environments (McNeil & Morgan III, 2010). Specifically, the Navy SEALs have implemented formal curricula that provide SET early in the SEAL candidates' training cycle and then reinforce the training throughout the candidates' careers (Robson & Manacapilli, 2014). While no specific data were made available, discussions with Navy psychologists indicated that the implementation of SET in conjunction with a more thorough physical preparatory program correlated with markedly reduced attrition rates from SEAL training (Robson & Manacapilli, 2014). Additionally, a recent report by Robson and Manacapilli (2014) recommended fully incorporating the SET cycle into the pararescue<sup>5</sup> training pipeline. The authors identified the need to develop behavioral and cognitive skills to supplement the physical skills already taught (Robson & Manacapilli, 2014). According to the report, SET should enhance performance in stressful environments, reduce attrition from training, and increase retention (Robson & Manacapilli, 2014).

While these examples provide exciting anecdotes supporting the implementation of SET in elite military settings, Russell and Deuster (2017) emphasize that it is important to avoid

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<sup>5</sup> The IPT specifically identified pararescue training as a parallel Department of Defense school system to the AST training pipeline (WRC, 2017a).

attempting to optimize performance via anecdote, trend, or fad. Fortunately, substantial empirical evidence also supports the implementation of SET training. A meta-analysis of 37 studies found that SET increases performance and decreases anxiety among those who work in stressful occupations (Saunders, Driskell, Johnston, & Salas, 1996). In this analysis, performance was defined by subjects' results on particular skills tests, and anxiety was analyzed as either a generalized state or specific to the performance targeted by SET. The effect sizes ranged from 0.31 to 0.56. While these results are promising, the findings related to performance improvements were based on substantially fewer experiments (11 hypothesis tests) than the findings related to decreases in anxiety levels (40 hypothesis tests) (Saunders, Driskell, Johnston, & Salas, 1996). Additionally, the specificity of the performance outcomes measured makes comparing these results and drawing generalized conclusions from this meta-analysis challenging.

More recently, Oudejans and Pijpers (2010) found that practicing tasks under mild levels of stress helps prevent errors when stress levels later increase. They measured subjects' dart-throwing accuracy when hanging from various elevations on a climbing wall. Those subjects who practiced throwing from a lower elevation under mild stress, performed at the same level when hanging high on the wall, while those without practice under mild stress at the low elevation demonstrated significant performance declines when high on the wall. Additionally, this training effect appears to generalize, at least to some extent, to novel stressors (Driskell, Johnston, & Salas, 2001).

Other recent work specifically demonstrates the efficacy of SET training for military populations. Subjects who received psychological skills training in goal-setting, positive self-talk, arousal-regulation, and mental imagery demonstrated significantly increased breath-hold

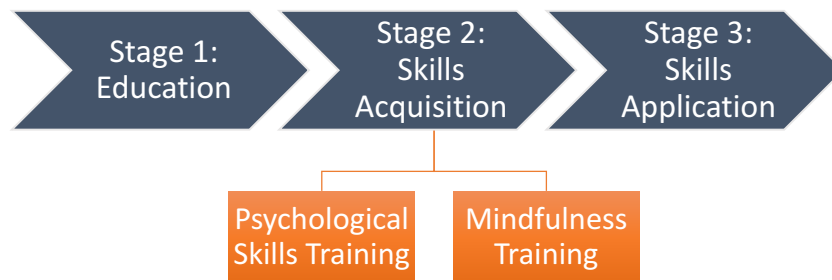
times upon cold-water immersion compared to a control group. In fact, the control group's breath-hold times decreased, on average, from 24 to 21 seconds across two trials, while the trained group nearly doubled their breath-hold times, improving from 25 seconds to 44 seconds (Barwood, Dalzell, Datta, Thelwell, & Tipton, 2006). Additionally, subjects with no flying experience flew their training aircraft significantly better after receiving SET than control subjects as measured by flight telemetry data and instructor evaluations (McClernon, McCauley, O'Connor, & Warm, 2011). Specifically, AST candidates familiar with the stressors of A-School by way of attending one-week of preparatory training in Elizabeth City, participating in the Training Center Cape May pilot program, or returning to A-School more than once have demonstrated greater success in training, albeit based on a limited sample size. In fact, those who reapply to A-School or are rephased to another class graduate at a rate over 75% higher than the overall graduation rate (52% compared to 29%) (WRC, 2017a, p. E-4). Dismantling research on SET is in its early phases, and the critical components of the program have not yet been fully identified (Robson & Manacapilli, 2014). However, West, Horan, and Games (1984) found all three stages to be most effective, and stage two, learning and mastering cognitive skills, to be the most important component.

### **Stage Two Training**

Currently the training pipeline for AST A-School lacks any deliberate focus on the second stage of SET training. Accordingly, I will present two possible models for stage two interventions: traditional psychological skills training (PST) and mindfulness training (MT). Comparisons of MT and PST based interventions have shown mixed results. In some cases MT produced better outcomes, in other cases the outcomes were comparable, and in yet other cases PST interventions proved superior (Van Dam et al., 2018). This ambiguity highlights the notion

of person-activity fit as discussed above (Schueller, 2014). PST models may be more effective for some candidates while MT may be more helpful for others (Adler, 2013).

## Stress Exposure Training (SET)



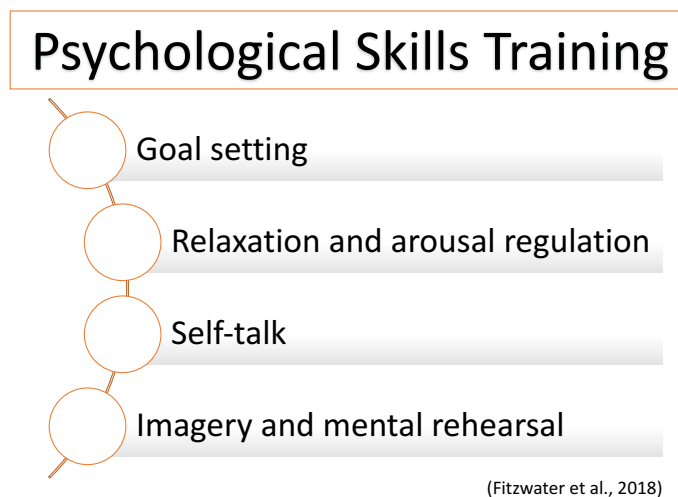
(Driskell & Johnston, 1998)

### Psychological Skills Training

PST has produced promising results in the military context (Adler et al., 2015; DeWiggins, Hite, & Alston, 2010; Hammermeister, Pickering, McGraw, & Ohlson, 2010). These interventions have been based primarily on theory, data, and applications drawn from sport psychology (Fitzwater, Arthur, & Hardy, 2018). For example, the Navy Special Warfare Preparatory School, an eight-week course designed to physically and mentally prepare candidates for Basic Underwater Demolition/SEAL training, allots 15-20% of training time to goal-setting and segmentation, visualization, arousal-control, and self-talk. Unfortunately, the specific curriculum taught is classified (Robson & Manacapilli, 2014). Additionally, Army Special Forces candidates receive a curriculum parallel to the SEAL model focused on goal-setting, attention-control, energy-management, integrating imagery, and building confidence (Robson & Manacapilli, 2014).

While empirical data from the Navy SEALs and Army Special Forces PST programs is not available, a recent study conducted by Fitzwater et al. (2018) in an elite British infantry

regiment provides support for the use of traditional PST in high-attrition military settings to increase mental toughness and improve performance. This intervention occurred during weeks 17 through 19 of Para basic training, a 28-week course widely considered one of the most mentally and physically demanding in the British Army (Fitzwater et al., 2018). This training often results in attrition rates as high as 60% due to injury, poor performance, and quitting (Fitzwater et al., 2018). Researchers introduced PST to the treatment group ( $n = 83$ ) during the two weeks preceding Pre-Para Selection, known as P-Company, which occurs during week 20 of Para basic training. This week serves as a test of physical fitness, mental fortitude, determination, and suitability for service in the regiment. During P-Company, candidates undergo a series of taxing individual and team-based exercises that include a 20-mile traverse over challenging terrain under a load of at least 45 pounds, an aerial-confidence course, and team-based 130-pound log and 175-pound stretcher carries (Fitzwater et al., 2018).



Apart from one practical outdoor session, all of the PST sessions, totaling 520 minutes of contact, occurred in the classroom (Fitzwater et al., 2018). The control condition ( $n = 90$ ) consisted of a group of candidates whose only contact with the researchers occurred when they



completed the required research questionnaires. The PST regimen was developed by a performance psychology doctoral student who had previously served as a warrant officer in the regiment (Fitzwater et al., 2018). This highly relevant experience facilitated the creation and delivery of training with a high level of contextual intelligence<sup>6</sup> (Brown et al., 2005). The training used interactive sessions to teach goal-setting, relaxation and arousal-regulation, self-talk, and imagery and mental rehearsal. It also encouraged candidates to practice these skills during physical training (Fitzwater et al., 2018).

The study found that the experimental group self-reported using goal-setting, self-talk strategies, imagery, and relaxation techniques significantly more after receiving PST training. Additionally, these candidates self-reported using relaxation and imagery significantly more than the control candidates during P-Company. The candidates who received PST also showed significant increases in observer-rated mental toughness and significantly better individual performance during P-Company compared to the control group (Fitzwater et al., 2018). Furthermore, the experimental group had a higher P-Company pass rate (91.6%) than the control group (85.6%); however, this result did not reach statistical significance, indicating that this difference could have occurred by chance (Fitzwater et al., 2018). Taken together, however, these outcomes suggest that traditional PST skills offer significant benefits for candidates in arduous, highly selective military training programs.

### **Mindfulness Training**

Personally, one of my most difficult days in AST A-School occurred during a run in the scorching North Carolina summer heat. I became so dehydrated that I cramped horribly, not just

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<sup>6</sup> Contextual intelligence is defined as understanding the operation of a system, its culture, and its language (Brown, Gould, & Foster, 2005).

a calf cramp, but a whole-body cramp from my hip all the way down to my toe. While running on knots of muscle, I had no idea how I would complete a single sprint or squat, but that did not matter. I could still shuffle along, and that was all I had to do at that moment. Fortunately, at the end of the run, it was time for lunch. My personal mindfulness practice<sup>7</sup> provided me with a powerful tool that allowed me to bring my attention back to the present moment and focus on what needed to happen right then (putting one foot in front of the other) instead of what might happen in the future (squats). That evening, I was able to focus on the comfort of my bed and the cool breeze of my fan as I drifted off to sleep. The ability to direct my attention to the present moment helped me down-regulate, recover, and avoid ruminating about the possibility of cramping the following day.

This type of mindfulness has a specific definition: nonjudgmentally attending to experience in the present moment (Hölzel et al., 2011; Kabat-Zinn, 1990). The ability to apply mindfulness can be learned and developed through daily practice just like any other skill (Smalley & Winston, 2010). As illustrated above, applying mindfulness helps bring an individual's mind back to the present in spite of what may have just happened or what might occur. At any point in time, candidates are not doing anything that difficult – one push-up, one pull-up, one foot in front of the other on a run, one fin stroke in the pool, one more second without breathing. Alone, none of these actions is difficult. It is the thought of continuing without end for seconds, minutes, hours, days, weeks, and months that threatens to break candidates. MT can help candidates work with these difficult thoughts, feelings, and experiences (Smalley & Winston, 2010). The power of mindfulness lies in its ability to make one aware of

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<sup>7</sup> This practice consists of at least ten minutes of sitting meditation daily. I usually practice immediately after awakening.

impulses and create the space to respond to these patterns with skill (Smalley & Winston, 2010). According to many studies, those who practice mindfulness show enhanced attentional abilities and improved emotional regulation (Hölzel et al., 2011; Wheeler, Arnkoff, & Glass, 2017).

While MT and PST stem from different schools of thought, the two are compatible. MT increases the ability of the practitioner to direct attention and down-regulate (Brewer, 2014; Hölzel et al., 2011; Tang, Hölzel, & Posner, 2015). Awareness of one's current thoughts is often necessary before deciding to change them (Moran, 2014). And controlling one's attention is critically important when attempting to adjust thoughts and beliefs (Hays & Brown Jr, 2004). Furthermore, the ability to down-regulate provides the mental space to employ the cognitive skills taught in PST, thereby increasing an individual's range of available responses (Brewer, 2014).

MT alters brain responses to stressors in healthy individuals, resulting in more resilient responses (Haase, Kenttä, Hickman, Baltzell, & Paulus, 2016). Multiple branches of the military have recognized MT as an approach to increasing resilience and enhancing performance while reducing stress and anxiety (Deuster et al., 2014; The Technical Cooperation Program, 2017; Whealin et al., 2013). In addition to providing skills to enhance performance during stressful training, MT provides a tool to help candidates return to baseline after training is complete, a process often ignored during traditional SET (Brewer, 2014).

Mindfulness Based Stress Reduction (MBSR), a standardized meditation training program, incorporates Buddhist meditation techniques into the western clinical setting and is often considered the gold standard of mindfulness interventions (Chiesa & Serretti, 2009; Van Dam et al., 2018). Meta-analysis of the application of MBSR to clinical and non-clinical populations suggests that the intervention increases individuals' ability to cope with stress and

disability; across multiple clinical and non-clinical populations, researchers found a medium effect size of approximately 0.5 ( $P < .0001$ ) (Grossman, Niemann, Schmidt, & Walach, 2004). Specifically in non-clinical populations, MBSR has been shown to reduce stress, trait anxiety, and ruminative thinking while increasing self-compassion and empathy (Chiesa & Serretti, 2009). Another meta-analysis of MBSR found significantly improved mental health (Fjorback, Arendt, Ørnbøl, Fink, & Walach, 2011). And recently, Gotink et al. (2015) reviewed 115 unique experimental trials which included over 8,600 individual participants and found mental health benefits including reduced anxiety ( $d = .49$ ), decreased stress ( $d = .51$ ), and improved quality of life ( $d = .39$ ) when individuals participated in MBSR or its close cousin Mindfulness Based Cognitive Therapy.

Specifically, mindfulness positively correlates with mental health in the military setting. Soldiers rated as having high mindfulness displayed fewer psychological symptoms and were less likely to be diagnosed with a clinical disorder (Bravo, Pearson, & Kelley, 2018). In addition to this cross-sectional evidence, controlled experiments have found benefits of MT in the military. Short form MT (eight hours of instruction) with an emphasis on in-class practice time preserved the working memory of soldiers participating in high-stress pre-deployment training (Jha, Witkin, Morrison, Rostrup, & Stanley, 2017). According to Colom, Martínez-Molina, Shih, and Santacreu (2010), working memory predicts multitasking capabilities, or the ability to execute multiple tasks within the same time-frame by frequently switching between tasks. Additionally, MT has been found to protect against decreased performance due to mind-wandering in similar settings (Jha et al., 2015). The ability to deliberately direct attention to one or multiple tasks as required by the A-School or operational environment represents a key mental

skill for AST candidates and duty-standing ASTs. These findings suggest MT could serve as a form of cognitive performance and resilience training (Jha et al., 2017).

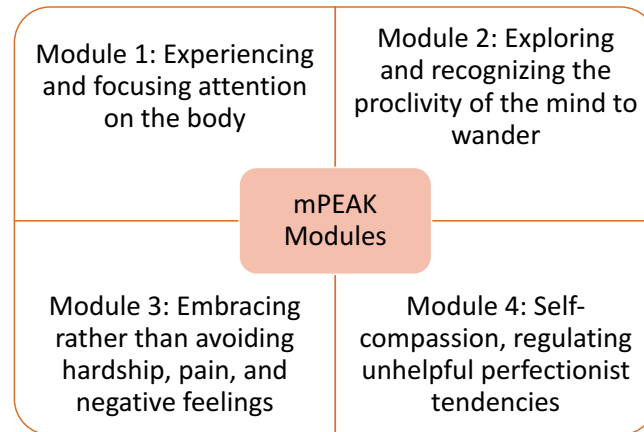
**Recommended program: mPEAK.** Meditation is the classic training tool used to develop mindfulness (Grossman & Van Dam, 2011). A multitude of web-based and mobile apps offer easily accessible MT; however, the quality and content of these programs varies substantially (Van Dam et al., 2018). Several manualized MT interventions designed to enhance athletic performance have been created. Mindfulness Acceptance and Commitment emphasizes increasing attention, awareness, and acceptance of the full range of thoughts, emotions, and physical states experienced by athletes to improve attentional and emotional regulation (Gardner, 2016). Mindful Sport and Performance Enhancement (MSPE) consists of six sessions based on MBSR that teach a variety of mindfulness skills and guides athletes towards applying these skills to both their sports and lives (Kaufman, Glass, & Pineau, 2016).

MT has also been designed specifically for the military. Mindfulness-based Mind Fitness Training (MMFT, pronounced “M-Fit”) was developed by Elizabeth Stanley, a former Army officer with extensive mindfulness experience and training in MBSR (Stanley, Schaldach, Kiyonaga, & Jha, 2011). Various versions of MMFT existed, but the basic structure of the program included a twenty-hour course, delivered over eight weeks, which introduced students to both the principles of MT and its application in the military setting. Also, students were required to complete thirty minutes of mindfulness practice outside of class per day. This program was designed to be integrated into high-stress organizational settings (Johnson et al., 2014). Unfortunately, MMFT is no longer readily available because it was created, owned, and run by a company no longer in existence (Flynn, 2016).

Fortunately, other promising MT programs designed for high-stress, healthy populations exist. Mindful Performance Enhancement, Awareness, and Knowledge (mPEAK) has been developed by the University of California San Diego's Center for Mindfulness based on MBSR like MMFT and MSPE (Haase et al., 2015). Two of the creators of mPEAK, Lori Haase and Martin Paulus, were part of the team that studied the effects of MMFT (Haase et al., 2016). This intervention rests solidly on the foundations of both MBSR and the military application of MT.

The current mPEAK program was designed in conjunction with the U.S. national BMX cycling team and consists of two days of manualized, intensive training conducted in person, followed by six weeks of online practice sessions. The in-person training consists of four 180 minute modules focused on different mindfulness topics aimed to increase resilience and performance. The first module introduces the concept of experiencing and focusing attention on the body (Haase et al., 2015), directly targeting kinesthetic self-awareness (Southwick et al., 2014). The second module focuses on exploring and recognizing the proclivity of the mind to wander (Haase et al., 2015), working to increase mental self-awareness – a key to both resilience (Southwick et al., 2014) and peak performance (Park et al., 2017). The third module focuses on embracing rather than avoiding hardship, pain, and negative feelings to avoid secondary suffering (Haase et al., 2015). This response directly targets self-regulation, or the ability to alter thoughts, feelings, or actions to be more adaptive (Masten, 2001). Finally, the fourth module addresses self-compassion, helping performers self-regulate unhelpful perfectionist tendencies (Haase et al., 2015). Following these modules, students are encouraged to practice mindfulness skills for at least 30 minutes per day, and mPEAK trainers continue to work with students through 90 minute weekly check-ins via a virtual classroom (Haase et al., 2015). As students develop mindfulness skills, they will also likely develop self-efficacy and mastery, gaining the

necessary skills and abilities to perform under stress and the belief that they can adapt these skills to novel situations (Masten et al., 2009).



(Haase et al., 2016; Haase et al., 2015)

A pilot study investigating the effects of mPEAK training on U.S. national BMX athletes ( $n = 7$ ) showed promising results (Haase et al., 2015). Researchers used fMRI and self-report measures to assess athletes' responses to breathing exercises designed to load inspiration, or make it more difficult to breath in. Reactions to loaded inspiration range from mild discomfort to severe fear (Haase et al., 2015), and this stressor closely parallels a source of anxiety encountered by AST candidates: lack of oxygen during water confidence drills (Sanchez, 2010). After seven weeks of mPEAK training, athletes reported higher levels of interoceptive awareness (the perception of internal bodily sensation) and emotional awareness (Haase et al., 2015). Specifically, they self-reported significantly greater ease in identifying feelings ( $d = 1.12$ ) and significantly more self-regulation ( $d = 1.51$ ). Additionally, they reported significantly increased abilities to describe and label their feelings and thoughts with words ( $d = .84$ ) (Haase et al., 2015). The associated brain scans suggested general changes in brain activity in regions involved in interoceptive processing and mindfulness meditation (Haase et al., 2015). While merely

suggestive, this pilot study provides encouraging data for the use of MT in elite, high-stress performance contexts (Haase et al., 2015).

Additionally, work conducted over the last four months with a mentee at my air station anecdotally suggests the possible effectiveness of mPEAK for AST candidates. Specifically, I introduced him to the skill of diaphragmatic breathing, a practice taught both in MBSR (Kabat-Zinn, 1990) and mPEAK (Haase et al., 2015). He opted to integrate diaphragmatic breathing into his pool training, one of the most challenging areas for many rescue swimmer candidates (WRC, 2017a). While debriefing his use of this skill in underwater training, he said that he found deliberately breathing in this manner prior to submerging made completing underwater laps noticeably easier; he felt less tension in his shoulders and chest prior to starting each lap. Comfort and confidence in the water is crucial for successfully completing AST A-School and serving as a water-rescue professional (Gonzalez, 2016). This anecdotal translation of theory to practice points to a specific possible benefit of mPEAK for AST candidates.

**Possible limitations.** While the potential benefits of mPEAK are exciting, it is important to consider possible negative outcomes of MT when applied to AST candidates. The absence of reported side-effects does not necessarily indicate a complete lack of them (Lustyk, Chawla, Nolan, & Marlatt, 2009; Van Dam et al., 2018). Lack of a standard or systemized method for reporting adverse effects in a fast-growing field might result in side-effects not being reported (Dobkin, Irving, & Amar, 2011; Lustyk et al., 2009). For example, Shapiro Jr (1992) found in a group of 27 long-term meditators that 17 reported at least one adverse effect, and two reported adverse effects strong enough that they ceased meditation entirely. Additionally, multiple case studies lend anecdotal support to possible negative outcomes associated with meditation ranging from delusions to increased risk of seizures (Lustyk et al., 2009). Furthermore, many Buddhist



guides to meditation discuss potential harmful effects of meditation (Van Dam et al., 2018).

Finally, promoting MT presents opportunity costs, possibly leading candidates to invest time in a training modality that doesn't necessarily add value when they could be spending it more effectively elsewhere (Van Dam et al., 2018).

Strategies for addressing potential harms center on exclusion criteria and informed consent (Van Dam et al., 2018). In order to ethically pilot mPEAK, researchers should screen potential subjects for psychiatric problems, addiction, post-traumatic stress disorder, and epilepsy risk factors. These individuals should either be excluded from the study or monitored by trained professionals with the subject's informed consent (Dobkin et al., 2011; Lustyk et al., 2009). While these considerations are less pertinent for young, healthy members of the Coast Guard, these screenings are an ethical imperative prior to conducting any MT. Additionally, it will be important to emphasize that MT is an additional training modality rather than a replacement for physical preparation.

### **Solutions**

Both positive and performance psychology map quite well onto the AST training pipeline. The Special Forces principle that "humans are more important than hardware" (Park et al., 2017, p. 82) echoes positive psychology's mission to make the lives of all people better (Seligman, 1999) and the Coast Guard's notion that "it is the people side, not the technical side, which is the most important to the success of the organization and its mission" (United States Coast Guard [WRC], 2017b, p. 12). In fact, the IPT uses the language of positive psychology in its call to prepare candidates who will "thrive" at AST A-School (WRC, 2017a, p. 2) and specifically calls for AST candidates to receive better mental and emotional preparation (WRC, 2017a). Additionally, the IPT (WRC, 2017a) and previous Coast Guard analysis call for the

involvement of sport science to help design an optimal training environment (Petherbridge et al., 2006). While the Coast Guard articulates the importance of people and psychological capacities, few – if any – direct mental or emotional training programs are provided to AST candidates. This proposal offers a way to start closing that gap.

Specifically, I propose a program of mental and emotional training to parallel the physical preparation of AST A-School candidates. As the IPT acknowledges, no single solution will fix the current problem (WRC, 2017a). These interventions will contribute to an already robust system of solutions. The primary goal of these interventions is to decrease the attrition rate at AST A-School by giving each candidate cutting-edge, empirically valid mental and emotional training tools to enhance their resilience to the stressors of training and performance under this stress. Accordingly, introducing MT and targeted PST guided by the framework of SET to the AST pipeline will likely increase A-School graduation rates.

### **Implementation**

Resources currently exist to introduce mPEAK and PST to AST candidates in the near future. J. Fitzwater has provided me with all of his PST lesson plans in their entirety (personal communication, June 23, 2018). Working under the supervision of my advisor and performance psychology practitioner, Dr. Gloria Park, I could adapt these modules for AST candidates. Additionally, the Department of Homeland Security (DHS) has allotted \$500,000 to conduct a pilot study of mPEAK with the Coast Guard, Immigration and Customs Enforcement, and Customs and Border Protection (S. Salvatore, personal communication, April 3, 2018). I have been working closely with Dr. Scott Salvatore, Chief of the Behavioral Health Branch at DHS to begin setting up this pilot in the Coast Guard, and a proposal for the inclusion of mPEAK in the AST training pipeline has already been routed to headquarters.

The structure of mPEAK lends itself well to incorporation into the PREP program, a five-day preparatory program for rescue swimmer candidates that convenes eight weeks before the start of candidates' six-month training program. Traditional PST skills could also be woven into the mPEAK curriculum or taught as separate lessons. At the conclusion of PREP, candidates would be given a take-home workbook to parallel the physical training program currently provided. Building on existing training would facilitate the sustainability and efficacy of this resilience and performance training (Adler, 2013; Meredith et al., 2011). Running PST and MT out of the A-School would create standardization across the fleet, avoiding the problematic lack of uniformity of the legacy Airman Program (WRC, 2017a). This structure would also limit the number of trainers required, thereby reducing program buildup-time and costs. Additionally, effects of resilience training have been found to be partly transient, decreasing in efficacy as time passes. Therefore, mental skills training should be offered close to when it will be employed (Greenberg, 2013), making PREP an ideal time slot for PST and MT.

I recommend providing further PST and MT resources on the central information portal recommended by the IPT (WRC, 2017a). Including these resources would continue to build this web-based resource into a complete "one-stop information" hub for AST candidates preparing for A-School (WRC, 2017b, p. 19). Again, I would be excited to work with the ATTC and Master Chief McCarthy to build out these resources (United States Coast Guard [DCMS], 2018).

The skills taught at PREP and developed through guided practice leading up to A-School should be further reinforced at school. For example, physical recovery sessions on Tuesday and Thursday mornings provide an avenue for revisiting and reinforcing PST and MT skills. And, water-confidence drills conducted during Tuesday and Thursday skills-based pool sessions could serve as an ideal setting to practice and reinforce MT and PST skills learned and mastered in

lower-stress environments. (See Appendix for a graphic summary of where these proposed interventions fit into the AST training pipeline.)

Generally, the more involved candidates are in training and the more they use it, the greater the benefits they will gain from it. The efficacy of SET increases with more training sessions (Saunders et al., 1996). Additionally, the benefits of MT appear to be dose-dependent, the more minutes of practice and the more training sessions attended the greater the benefits (Gotink et al., 2015). MT practice time matters, and – as with most skills - the benefits only manifest if individuals regularly engage in MT (Jha et al., 2017; Rooks, Morrison, Goolsarran, Rogers, & Jha, 2017). These findings highlight the benefits of candidates actively choosing to engage in a mental training program, and warns against forcing candidates to participate in PST or MT (Fjorback et al., 2011).

Lessons learned from the implementation of CSF2 should help guide the introduction of MT and PST to the AST training pipeline. First, performance and mental health are not necessarily overlapping constructs and may require different methods of training and evaluation (Greenberg, 2013). Grouping these two goals together as one construct may result in an exaggerated focus on short-term performance over longer-term resilience (Adler, 2013); enhancing performance may not increase mental health (Greenberg, 2013). This distinction supports the inclusion of both MT and PST to facilitate both performance and recovery.

One possible unintended consequence associated with resilience training concerns an embedded assumption that external demands are not amenable to change, thereby resulting in a lack of effort to address unnecessary demands (Adler, 2013). This assumption could manifest itself at A-School in the form of using resilience training to justify not providing better beds and air conditioning in the dormitory and more nutritious food in the galley. Additionally, focusing

on building resilience without acknowledging that human beings all have limits to what they can endure runs the risk of generating critical self-talk in the face of a failure of resilience (Adler, 2013).

Furthermore, the Army's experience with CSF2 highlights the need to consider possible iatrogenic effects of an emphasis on resilience (Adler, 2013). Future resilience and performance programs should use pilot studies to help detect unintended consequences and refine delivery prior to rolling out the intervention on a large scale (Steenkamp, Nash, & Litz, 2013). Some interventions that make logical sense, for example post-event psychological debriefings, have been shown to hold little benefit and increase aversive symptoms in some individuals (Litz, Gray, Bryant, & Adler, 2002). Accordingly, I recommend piloting PST and MT with the AST candidates stationed at Training Center Cape May prior to rolling out a mental training program for the entire fleet at PREP.

Finally, it is important to avoid overselling the efficacy of resilience and performance programs, even targeted ones (Greenberg, 2013). They are not panaceas, and it is important to explicitly acknowledge this fact: soldiers will still develop mental health problems (Lester et al., 2013), and students will still fail out of A-School.

### **Contextual Intelligence: Why Me?**

I am both personally, professionally, and academically fascinated by the questions surrounding mental toughness, resilience, endurance, and their relationship to well-being. I have explored these questions both experientially as the 895<sup>th</sup> graduate from the Coast Guard's helicopter rescue swimmer school and academically in the University of Pennsylvania's Masters of Applied Positive Psychology program.

I joined the Coast Guard to be a rescue swimmer. Since making it through A-School, I have remained fascinated by the recipe for exceptional achievement. I love my job and am deeply impressed by the brothers and sisters with whom I work. Many performance psychologists identify work with high-risk professionals as particularly challenging (Hays, 2012) because they are reluctant to accept advice or suggestions from those without first-hand experience of the work (Hays & Brown Jr, 2004). Specific research evaluating the adoption of mental skills training among special forces populations notes barriers to acceptance and integration of training that comes from outside the community (Robson & Manacapilli, 2014). I have this knowledge, or contextual intelligence. The key to contextual intelligence is knowing how a system operates, its culture, and its language. Developing contextual intelligence is like preparing to visit a foreign country (Brown et al., 2005). I grew up in AST country. I know the culture, and I speak the language fluently. I know intimately the stress of two no-gos, the tingling extremities, tunnel vision, and queasy reflexive panic that accompanies buddy brick, and the immense pride of passing the final multi.

Prior to designing an intervention, one must account for the unique culture, missions, and circumstances of a particular community (Park et al., 2017). For any intervention to work, it must be presented in an individual's language and correspond with that individual's understanding of the world (Brown et al., 2005). I speak the language, and I know the world in which we operate. In this particular domain, I am ideally suited to translate research into practice.

I also have the relevant academic training. The University of Pennsylvania has prepared me with "the single best learning experience in positive psychology" (Seligman, 2018, p. 405). I have been trained in the core theories, measures, and interventions specific to positive

psychology and have been exposed to world renowned teachers and scientists (Seligman, 2011). This project represents a fusion of my passions, drawing on both my personal and academic experience to offer insight into the mental toughness, resilience, and well-being necessary to become an AST.

### **Measurement Plan**

All the interventions recommended above have strong empirical support; however, AST A-School and its candidates represent a new and unique context. To confirm that the interventions are in fact improving students' resilience and performance, I recommend a rigorous evaluation procedure.

I recommend working with the A-School to determine the most relevant metrics to track (Park et al., 2017). These selected outcomes should align with goals of the organization (Adler, 2013). Relevant metrics to consider include graduation rates and training performance, including both peer and instructor ratings (Adler, 2013; Robson & Manacapilli, 2014). Additionally, specific reasons that candidates DOR should be investigated and tracked to paint a more comprehensive picture of the factors leading to this quitting. Other important considerations include the degree to which candidates practice the PST or MT skills and the degree to which students find these skills relevant and useful. Additionally, various psychometric measures that isolate changes in resilience and mindfulness could be tracked. Comparing changes in these measures with performance would offer insight into the efficacy of PST and MT in the A-School context.

One possible metric to use with respect to PST and MT skills is the Military Training Mental Toughness Inventory, which uses instructor report to measure candidates' ability to sustain optimal performance in various high-stress situations (Arthur, Fitzwater, Hardy, Beattie,

& Bell, 2015; Fitzwater et al., 2018). Several possible metrics to measure the psychometric effects of MT include the Five Facet Mindfulness Questionnaire (FFMQ), the Multidimensional Assessment of Interoceptive Awareness (MAIA), and the Toronto Alexithymia Scale (TAS) (Haase et al., 2015). The FFMQ is one of the most highly cited measures of mindfulness (Van Dam et al., 2018) and assesses its five integral components: non-reactivity to inner experience, non-judging of inner experience, acting with awareness, observing, and describing (Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006). The MAIA measures body responsiveness and awareness (Mehling et al., 2012). The TAS evaluates an individual's ability to identify and describe his or her emotions (Bagby, Taylor, & Parker, 1994). Finally, the Connor-Davidson Resilience Scale (CD-RISC) (Connor & Davidson, 2003) provides a global measure of resilience commonly used in the military. This scale successfully predicted both attrition and mental health diagnoses among over 53,000 enlisted candidates at Air Force basic training (Bezdjian, Schneider, Burchett, Baker, & Garb, 2017). Assessing resilience among AST candidates using the CD-RISC would provide useful data for evaluating the relationship between MT, PST, and the development of resilience.

While the gold standard in experimental psychology is the random-assignment, placebo controlled (RCT) experiment, research standards in the military ultimately fall secondary to completion of the mission (Jha et al., 2017), in this case the training of high quality ASTs. Accordingly, we may need to rely on qualitative assessment, quasi-experimental designs, and RCT experiments with other groups to examine the efficacy of training (Adler, 2013). Grant and Wall (2009) suggest quasi-experimental design when random assignment is not possible. One way to accomplish this design at A-School consists of group randomized trials (Adler, 2013), offering PST or MT to certain classes, placebo interventions to other classes, and no treatment to



a yet another group of classes. In this design, the placebo interventions should not waste participants' time. Possible placebo conditions include other activities recommended for minimizing stress associated with high level training: time in nature, listening to music, listening to sounds of nature, and chewing gum (Deuster et al., 2014).

Measurement and evaluation of this program should provide useful, unclassified data to other elite rescue organizations interested in increasing performance and resilience in high-stress environments. Additionally, the results of this program will help inform the further integration of MT and PST in high-performance settings.

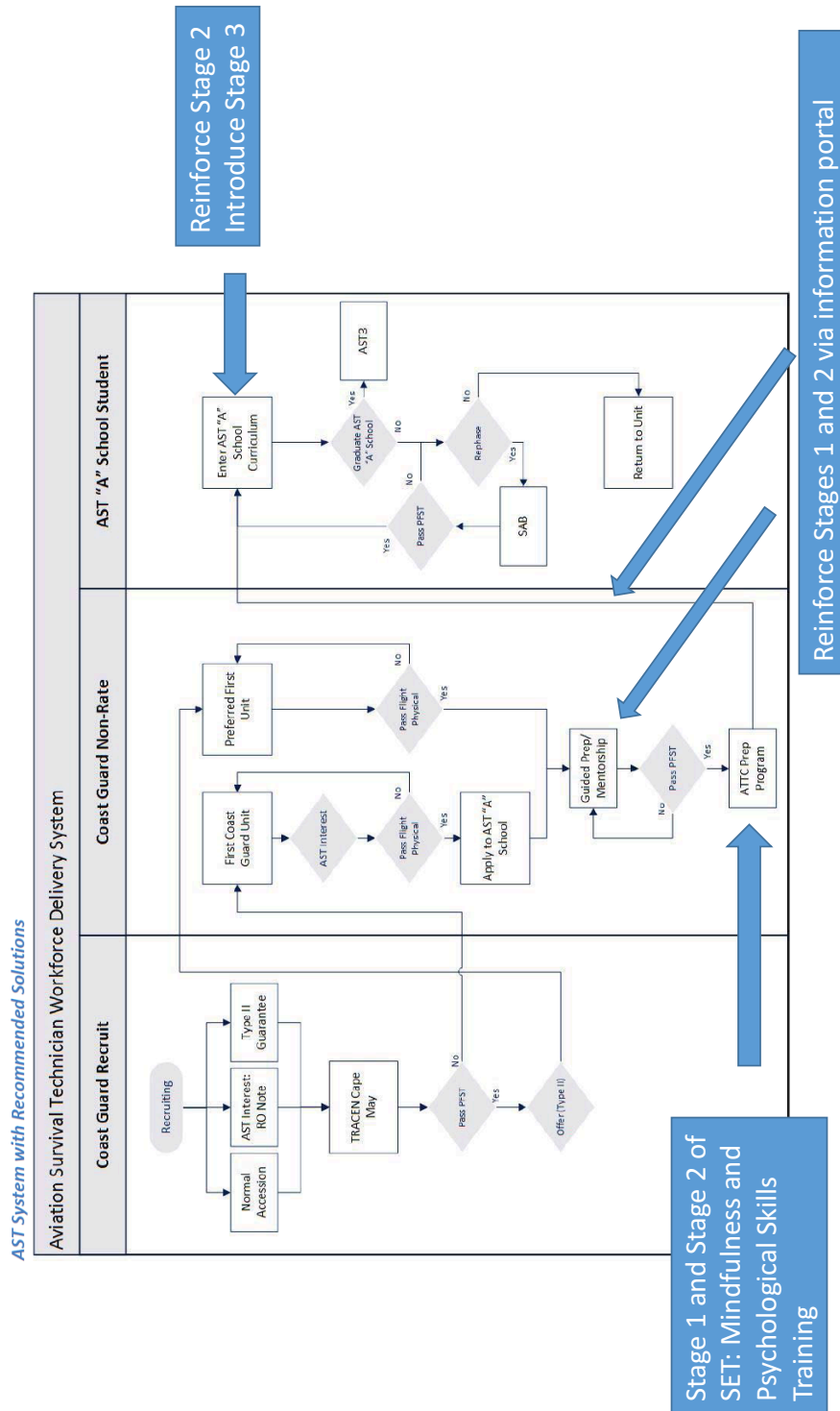
### **Conclusion**

All of the solutions proposed by the IPT are categorized in terms of projected impact and cost (WRC, 2017a). Introducing PST and MT to the AST training pipeline should have a medium to high impact by increasing AST candidates' resilience to the stressors of training and improving their performance under stress. In combination with the system of solutions recommended by the IPT (WRC, 2017a), the proposed mental training should decrease the attrition rate at AST A-School. Adding mental skills to the training pipeline would cost very little since much of the groundwork has been laid, and I am willing and excited to continue working on this project. The highest cost would likely be the time required to champion the necessary policy changes to authorize the training and track the results. Much of this work would likely fall under the purview of the IPT.

The Coast Guard is facing a shortage of AST3s due to low graduation rates from AST A-School. Stretching thin a workforce which operates under some of the harshest conditions on the planet is a recipe for unnecessary injury or even loss of life. In order to help maintain the rigorous, non-negotiable performance standards at the A-School, positive and performance

psychology offer tools to increase candidates' resilience to the stressors of training. Informed by the military's recent focus on building resilience, traditional PST and MT offer empirically-grounded training paradigms to help address this problem. Situating PST and MT in the stress exposure training cycle already employed in many military settings offers a contextually relevant framework for applying these interventions. Specifically, PST and MT could be incorporated into existing training in three places: 1) PREP, 2) the web-based information portal for candidates, and 3) specific elements of A-School. Accordingly, introducing targeted mental training as part of the already improved rescue swimmer training pipeline should help increase graduation rates and produce more candidates prepared to live the rescue swimmer motto, "so others may live."

Appendix



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