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THESIS

**ALTERNATE STRESS MANAGEMENT BEHAVIORAL
TECHNIQUES DURING SUSTAINED
STRESSFUL PERIODS**

by

Stephen R. Gagnon

March 2023

Thesis Advisor:

Co-Advisors:

Second Reader:

Kathryn J. Aten

Nita L. Shattuck

Simona L. Tick

Paul Lester

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DURING SUSTAINED STRESSFUL PERIODS**

Stephen R. Gagnon
Lieutenant, United States Navy
BS, University of Southern Maine, 2012
MS, University of Hawai'i, Manoa, 2016
MSK, Indiana University, Bloomington, 2018

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requirements for the degree of

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**NAVAL POSTGRADUATE SCHOOL
March 2023**

Approved by: Kathryn J. Aten
Advisor

Nita L. Shattuck
Co-Advisor

Simona L. Tick
Co-Advisor

Paul Lester
Second Reader

Marigee Bacolod
Academic Associate, Department of Defense Management

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ABSTRACT

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LIST OF ACRONYMS AND ABBREVIATIONS

BUD/S	Basic Underwater Demolition/SEAL
CARERS	Coaching, Advocacy, Respite, Education, Relationship, and Simulation
CBT	Cognitive Behavioral Therapy
CJCS	Chairman, Joint Chief of Staff
COE	Culture of Excellence
ENHANCE	Enduring Happiness and Continued Self-Enhancement
E-OSC	Expanded Operational Stress Control
MBM	Mind-Body Medicine
N17	Office of the 21st Century Sailor
NCCOSC	Naval Center for Combat and Operational Stress Control
NETC	Navy Education and Training Command
OPNAV	Office of the Chief of Naval Operations
OSC	Operational Stress Control
PATH	Program for Accelerated Thriving and Health
PIT	Pressure Inurement Training
REBT	Rational Emotive Behavior Therapy
SEAL	Sea, Air, and Land
TFF	Total Force Fitness
TSF	Total Sailor Fitness
WT	Warrior Toughness

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I. INTRODUCTION

Physical and mental readiness is the *sine qua non* for Sailors to meet national defense mission requirements. This constraint places a heavy burden on those willing and able to serve, and it is the responsibility of not only individual sailors but also their leaders to ensure such readiness. Service in the U.S. Navy poses unique stressors on sailors. Achieving Total Force Fitness (TFF) is dependent on achieving Total Sailor Fitness (TSF). The Navy seeks to further understand how to support sailors through all eight domains of TFF, which are social, physical, financial, spiritual, medical and dental preventive care, environmental, nutritional, and psychological factors (CJCS 3405.01). This study reviews prior reports and identifies evidence-based and evidence-informed techniques to manage and recover from stress that can be applied to the unique operational tempo of the Navy.

The purpose of this study is to seek to identify behavioral stress management techniques that are used in the civilian sector to help Navy leaders address stressors impacting their sailors today.

The following questions guided the literature review and analysis:

1. What are effective stress-optimization and recovery techniques that can be adapted to Total Sailor Fitness?
2. What combination of behavioral techniques are most likely to be effective in building stress tolerance and managing acute stress response in sailors?
3. How do these behavioral techniques compare to the techniques sailors are currently using?

To address these questions, I use a meta-narrative analysis approach to answer the primary research questions. I review and analyze existing literature to identify promising techniques. To augment the literature review findings, I analyze the responses to exploratory questionnaire on techniques used by Sailors to cope with stress. At the end, I present recommendations on how Navy leaders responsible for the 21st Century Sailor programs can move forward with an assessment plan for the stress management support offered to Sailors.

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II. BACKGROUND

A. E-OSC V. WT

Following World War I, when the concept of “shell shock” became prevalent among soldiers and psychologists (Jones, 2012), stress became a prevailing sociological concern for the military. Since then, the Navy has attempted to alleviate factors contributing to stress; however, stress remains a challenge for service members. The Office of the 21st Century Sailor is implementing a program called Expanded Operational Stress Control (E-OSC). This program includes two major concepts intended to promote health and well-being among sailors: Total Force Fitness and a Culture of Excellence. Similarly, the Navy Education and Training Command (NETC) is pursuing the concept of Warrior Toughness (WT) and is implementing it in their curricula.

These two pursuits, WT and E-OSC, overlap but have distinctions. According to guidance from NETCI 1700.2 (Naval Education and Training Command, 2021), Warrior Toughness is focused on maximizing the performance of sailors through toughness to win the fight, and is built upon 3 pillars: performance psychology, warrior mindset, and character development, i.e., mind, body, and soul, respectively. E-OSC is focused on recovery and prevention of stress injuries to improve resilience so sailors can manage stress as they encounter it and stay in the fight. Morgan and Campbell (2021) provide an analysis of these programs. This thesis focuses on the priorities of OPNAV N17 and the inclusion of E-OSC in the fleet.

B. E-OSC ORIGIN AND IMPLEMENTATION

In 2019, the CNO distributed NAVADMIN 222/19 during suicide prevention month, dictating the emergence of the E-OSC program. The program creates a peer-to-peer support structure built from evidence-based practices. The program includes training an E-OSC team in each command, including a team lead (TL) and assistant team lead (ATL), which works within the Command Resilience Team (CRT) to help sailors manage the stressors of a Navy lifestyle. Resilience, as defined by the OPNAV N17 office, is “the ability to persevere, adapt, and grow through adversity,” and the mission of E-OSC is “To

build Navy resilience through toughness, trust, and connectedness while educating on stress management to maintain mission and personnel readiness” (MyNavyHR, 2023a). Sailors are not expected to eliminate stress, rather the goal is that they will “get good at stress” (MyNavyHR, 2023a). A continuum can be used to select current stress levels and track individuals’ stress level at any given time. The stress continuum is based on the Yerkes and Dodson (1908) curve (discussed later) and includes selections of idle, ready, reacting, injured, or ill. According to N17 (MyNavyHR, 2023c):

Culture of Excellence (COE) is a Navy-wide approach owned by Chief of Naval Operations (CNO) that empowers the Fleet to achieve warfighting excellence by fostering psychological, physical and emotional toughness; promoting organizational trust and transparency; and ensuring inclusion and connectedness among every Sailor, family member and civilian throughout their Navy journey. (MyNavyHR, 2023c)

The Naval Center for Combat and Operational Stress Control (NCCOSC) along with OPNAV N17 piloted and evaluated the E-OSC program. These organizations observed the implementation of the E-OSC program in 11 different operational commands with 711 responses from Fleet Forces and Pacific Fleet. The evaluation examined the impact of the E-OSC program on Sailor and unit readiness at 3 points in time including initial implementation, evaluation at 4 to 8 months after implementation, and another evaluation at 12 months post implementation. The assessment showed the training components (indoc, crew, and leadership) contributed to the E-OSC program the most, however there was a low percentage of participation and feedback. The analysis showed that those who were trained in E-OSC (34% of the recruited sample) had better command domain scores in command signature behaviors, trust, and willingness to ask for support. In the personal domain, Sailors had better scores in resilience, stress, toughness, connectedness, and engagement in healthy behaviors. Among those who participated and provided feedback, there was a positive response of acceptance and desire to continue using the program. The most common obstacle identified in each command was the availability of time to implement the program.

The findings of the pilot study suggest many Sailors and civilians recognize the promising potential of the initiative and would like to implement the techniques it proposes.

However, time constraints and other competing demands present significant obstacles to implementation. Simply implementing the program seems to be an added stressor on top of employees completing their job duties, completing their collateral duties, fulfilling training requirements, executing leadership responsibilities, and taking care of their personal lives. Thus, this study seeks to identify effective stress management techniques that can be easily taught through the 21st Century Sailor's initiatives and integrated into Department of the Navy employees' daily activities to achieve a culture of excellence.

C. IMPACT OF STRESS

Stress can be either beneficial or detrimental to an individual. Early research by Yerkes and Dodson (1908) showed that stress can have beneficial effects through an inverted U-curve diagram. Their research showed that a moderate amount of stress can facilitate optimal performance where lower and higher amounts of stress are associated with low performance. This moderate zone is considered "eustress." The inverted U-curve also lines up with Selye's (1946) General Adaptation Syndrome. Therefore, it is not necessary or advised to avoid stressors completely. Selye (1976, p. 1) states, "All living beings are constantly under stress and anything, pleasant or unpleasant, that speeds up the intensity of life, causes a temporary increase in stress, the wear and tear exerted upon the body. A painful blow and a passionate kiss can be equally stressful." As such, stress is naturally encountered in all facets of life; however, it is managed slightly differently given the context.

It is well understood that stress can also have deleterious effects on people and their performance on regular activities. In a learning environment, physiological responses to stress can enable better connections to the material being learned. However, with too much stimulation, learning becomes hindered (Vogel & Schwabe, 2016). One way to induce desirable responses is through mindset training. Smith et al. (2020) show that a "stress is enhancing" mindset creates a better potential for success among special operators. If this mindset can be more broadly applied to other communities, improved resilience and performance may be demonstrated. Decision making is another area of high stress, particularly in the military with the potential factors that are at stake. Gamble et al. (2018)

specifically discuss how the decision maker is more likely to make errors under stress even on a simple friend-or-foe identification task. In line with previous research discussed, the physiological response adapts to the degree of stress being experienced.

Performance is impacted by three stress factors which are “Inputs (environmental demands), Adaptation (responses occurring within a person that enable them to adapt to environmental demands), and Outputs (performance as a consequence of the environmental demands and any adaptations made)” (Pomeroy, 2013, p. 1). Regardless of what the stressor is, all stressors either affect the individual physically or cognitively elucidating similar physiological responses (Kavanagh, 2005). Given enough stimulation over a long enough period, stress induces negative physiological responses (Selye, 1976) causing negative or counterproductive performance (Yerkes & Dodson, 1908), potentially leading to illness or injury (MyNavyHR, 2023a). For example, among 809 military personnel surveyed on work stress, 27.4% of these service members “reported suffering from significant job stress” (Pflanz & Ogle, 2006, p. 861). It is imperative to identify the unique stressors to the military to counter them and avoid such stress induced injury.

D. UNIQUE ENVIRONMENT OF THE MILITARY

Navy service members experience unique stressors which coincide with the sacrifices they make for the sake of their service. For example, Sailors earn less than equivalently skilled civilians. According to public records, the paygrade which had the highest percentage of officers across all branches in 2011 was O-3. In 2011, full-time male workers who graduated college made about \$54K/year at 27 years old, ~5 years out of graduating college (Ehrenberg & Smith, 2015). This is roughly equivalent to an O-3 with 1 year of experience who was making about \$10K less. Beyond reduced pay, there are added pressures on military members compared to civilians being required to report on annual progress, are ordered to move and change jobs every 2–3 years, must work with limited staffing, and strive to maintain the standard of the most powerful military force in the world.

Military leaders also have many stressors as they are responsible not only for their own jobs but also for the lives of those in their charge. This entails doing the best possible

work with the manning provided and supporting everyone on the team well. There are consequences if this job is not done well. It has been shown recently that manpower policy decisions relying on reduced workload from technological advances have caused insufficient manning, training, and maintenance (Fletcher, 2018). It has also been shown that perception of unfairness or a psychological breach of contract are linked to detriments in physical and psychological health (Robbins et al., 2012).

E. POTENTIAL METHODS TO COUNTER STRESS

According to a RAND report by Meadows, Miller et al. (2016), every person has a level of resilience going into any potentially stressful situation. The level of resilience is based on a multitude of life factors such as a strong support group, regular workout routine, or involvement in a religious community. For instance, the more TFF domains in which an individual is engaged, the more resilient they can be. As an individual encounters a negative stressor, they use their resilience to cope with these stressors and transition to “post-stress pool of resilience resources” (Meadows et al., 2016, p. 17). Based on this model, it becomes quickly apparent that extended exposure or chronic stress can become detrimental to individuals such as military servicemembers who do not always have access to all possible resilience resources. Pomeroy (2013) describe how servicemembers encounter stress which involves inputs, adaptations, and outputs (previously discussed). Taylor et al. (2021) point out that organizational commitment, being the emotional connectedness between employee and employer, is the single most important factor for retention. Smith et al. (2020) point out that trainees in the Navy SEAL BUDS school who use a “stress-is-enhancing” mindset have a greater potential to graduate successfully from the training. Acknowledging inputs, adaptations, and outputs of stress on military servicemembers by the U.S. Navy has a direct connection to retention and success moving forward which is extremely important given the current difficult recruiting environment for the military.

F. MOVING FORWARD

Continued stress-related incidents in the Navy suggest that there is room for the military service to improve how it assists Sailors in mitigating the stress they face while

serving. As such, priorities by Navy leadership have shifted toward giving more attention to the people who, as publicly stated by all military leaders and offices, are the greatest asset of the organization. Concepts like Total Force Fitness through the CJCS 3405.01 exhibit an understanding and appreciation for the “whole person” perspective by the Joint Chiefs of Staff. DODI 6400.09 (2020) demonstrates a recognition of the significant problem of self-harm due to stressful conditions across the whole Department of Defense. Evolution from Operational Stress Control (OSC) to Expanded OSC and then emphasis on concepts like “resilience” and toughness through E-OSC and WT respectively (Morgan & Campbell, 2021) are steps toward achieving mitigation of the variety of stressors within the military environment. Finally, Smith (2019) demonstrates in his research that it is not only important to provide education, but also necessary to get people to consider their own stress and fatigue, provide nudges toward means of managing stress, and gain personal commitment to do so by the sailors.

As such, it has been demonstrated that organizational stress management can be done with “an organizational philosophy and set of principles that employ specific methods for promoting individual and organizational health while preventing individual and organizational distress” (Quick et al., 1997, p. 149). Therefore, it is imperative as a forward-thinking organization to find and communicate effective and proven means of building resilience that can be implemented in programs already in place today to achieve TFF. The remainder of this thesis will present the methods of the research in chapter 2. Chapter 3 will analyze results from data collection and findings of the literature review. A discussion of the primary research questions along with recommendations of how to move forward will be presented in chapter 4. Finally, chapter 5 will provide conclusions and limitations from this thesis.

III. METHODS

This research includes two different data collection strategies: an analysis of literature, and a survey. The analysis of literature was a meta-narrative analysis intended to gain insight from peer-reviewed sources on stress management techniques which have been practically applied. The second strategy was an exploratory descriptive questionnaire which sought insight from two different shore-based commands with 24-hour watch floors. The survey was used to gain a better understanding of sailors' current stress management techniques and their knowledge of what is available to them.

A. META-NARRATIVE ANALYSIS APPROACH

This study is an exploratory meta-narrative analysis of extant literature. This method is described by Greenhalgh et al. (2004): "A meta-narrative is the unfolding 'storyline' of research in a particular scientific tradition (defined as a coherent body of theoretical knowledge and a linked set of primary studies in which successive studies are influenced by the findings of previous studies" (p. 583).

The meta-narrative in this study uses an integrative approach which combines data sets from multiple studies to be statistically analyzed, and an interpretive review which is "a way of synthesizing individual studies that focus on a specific topic in order to create an in-depth understanding of the topic of study" (Watkins-Kagebein et al., 2019, p. 337). A key assumption or guiding precept to this type of research is that the research design evolves over time, requiring multiple modalities in approaching the information gathered to allow for more accurate interpretation of the data.

An objective of this paper is to discover available techniques through a literature review and begin to partition the most often used techniques and determine in which domain of Total Sailor Fitness each technique belongs. The information discovered through this literature review is to be used to begin identifying trends and make it possible to compare current methods with possible strategies for the Navy moving forward. A deductive approach was used in conducting the integrative aspect of the literature review to discover more specific fields of studies to search through. A broad search of peer

reviewed literature was conducted to gain a better understanding of what fields of literature to search within, and what criteria to search. Based on this analysis, I was able to create a data table of related research articles which was then used to inductively form themes and trends based on information gathered through the meta-narrative analysis.

This search consisted of an interview of a licensed clinical social worker engaged with individuals from a variety of career fields in Veterans Affairs (VA). It also consisted of a search of scholarly articles of various fields such as business, athletics, and psychology. Finally, I built on my own professional experience including 8 years of research devoted to physiological impacts of stress and athletic performance. Based on the synthesis of this search, it was determined that the initial search criteria would be restricted to fields of Organizational Management, Sports Medicine, Medical Physiology, Psychiatry, and Psychology. SciMago was then used to choose top ranked journals within these fields to be able to select appropriate articles from. After a thorough search through the journals, it was determined that sufficient data had been collected without including articles from the Medical Physiology or Sports Management fields.

An initial search (dubbed the “first pass”) of articles was conducted based on the following criteria: the articles must be ranked no lower than Q2, strictly quantitative research (review or conceptual articles), could only be related to stress management, research occurred between the years of 2012 and 2022 for relevance, subjects used in the research could not have pre-diagnosed psychoses, and search words were “stress management techniques.” It was understood that any article providing behavior management techniques would be biased toward the type of journal it was published in. It was also understood that this search was not only focused on the broad topic of stress, but rather it was seeking connections to symptoms of stress (i.e., psychoses, depression, fatigue, mindfulness, etc.). The first pass required an insinuation toward stress management techniques for such symptoms in the title or abstract. A total of 1,187 articles were retrieved that fit the criteria in the first pass.

While searching under specific journal titles in Google Scholar chosen based on the criteria discussed, a variety of articles from related journals were also included in the search to establish a broader spectrum of perspective in the search results. The final list of journals

included *Comprehensive Psychiatry*, *World Journal of Psychiatry*, *Mindfulness*, *Journal of Applied Psychology*, *Journal of Applied School Psychology*, *Journal of Applied Sport Psychology*, *Journal of Applied Social Psychology*, *Journal of Applied Developmental Psychology*, *Journal of Professional and Applied Psychology*, *Journal of Applied Psychological Research*, and the *Journal of Experimental Psychology: Applied*. See Table 1 for breakdown of number of journals by category included in literature review.

Table 1. Journal count breakdown.

Field of Study	Journal	# of Studies
Psychiatry	- Comprehensive Psychiatry	1
	- World Psychiatry	1
	- Mindfulness	1
Psychology	- Applied Psychology	10
	- Applied School Psychology	1
	- Applied Sport Psychology	11
	- Applied Social Psychology	2
	- Professional and Applied Psychology	1
	- Experimental Psychology	1
	- Applied Psychological Research	1
	- Developmental Psychology	1
	- Psychological Services	1
	- Personality and Social Psychology	1
Military	- Military Medicine	2
Art	- Art Therapy	1
Total		36

Upon completion of the first pass, a second pass was conducted to narrow the articles down to a tally of less than 60 articles to be analyzed from which to build a narrative. Within the 1,187 articles retrieved, 33 articles were kept that met all the criteria and were used to build the data table from the literature review. The data table consisted of gathering information including the citation, field of study, research question provided, setting and method of the study, number and demographics provided of the participants, type of data, and how the study is connected to research questions for this study. An additional seven articles were provided by the NCCOSC, and three more from local sources

at NPS, among which five were kept due to relevance to this study bringing the tally of kept articles to 38. A separate document was then created to list all themes from each article under the associated categories from the data table allowing for statistical analysis and creation of themes between studies. Finally, the data table was used to determine which TFF domain and defining terms of the associated domain within which each study fit. Through this process, two more studies were eliminated because the population demographics of the participants in them was not applicable to the audience of this study, bringing the final tally of kept articles to 36.

B. EXPLORATORY DESCRIPTIVE QUESTIONNAIRE

A questionnaire was distributed to two different shore commands, Fleet Weather Center (FWC) San Diego and Naval Computer and Telecommunications Station (NCTS) San Diego. An exploratory descriptive questionnaire was given to a purposeful and theoretically driven participant selection to elaborate the findings of the meta narrative analysis. The questionnaire was presented to the subjects as an inquiry on what current stress management techniques sailors use and what techniques they are aware of being available to them. Additionally, it was discussed with the subjects that the information being collected could help provide justification for a campaign to promote more effective resources for sailors, or an understanding of how to better educate sailors on resources already available to them. This questionnaire was distributed as part of a pilot study for N17 to determine what stress management techniques are most utilized or on which techniques sailors are most educated.

Stress management measures listed in the questionnaire were based on common themes arising in the literature review and on TFF domains. The association of TFF domains was used to gain insight on if sailors are practicing stress management techniques in all domains or if their preferences and common practices were skewed toward particular domains. General demographic information was requested including age, sex, rate, rank, department, and years on active duty. Table 2 shows there was no significant difference in demographics between the two commands from which the participants were recruited. Participants were then asked to mark off any stress management measures they use among

the list of 33 measures provided based on the criteria discussed. In addition, participants who volunteered to provide insight for this questionnaire were asked to rank their top 3 choices of most frequently used measures, and subjectively rank their top 3 choices of most effective measures. Participants were also asked to list other techniques that they use which were not provided on the previous list, which resources they were aware of at their location, and which resources they used most frequently which are available at their location. Finally, the last question asked for an estimation of how many hours in the last month participants practiced their top 3 stress management measures at home and at work.

Table 2. Balance table of participants for exploratory descriptive questionnaire

		Missing	Overall
n			39
1. What is your age?, mean (SD)		0	28.9 (8.0)
2. What is your sex?, n (%)	F	0	14 (35.9)
	M		25 (64.1)
4. What is your rank?, n (%)	E3	0	2 (5.1)
	E4		9 (23.1)
	E5		12 (30.8)
	E6		5 (12.8)
	E7		4 (10.3)
	E8		2 (5.1)
	O2		2 (5.1)
	O4		1 (2.6)
	E2		1 (2.6)
	O1E		1 (2.6)

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IV. ANALYSIS

A. CATEGORIZATION OF STRESS MANAGEMENT

Stress research spans multiple disciplines including sports, neurobiology, organizational research, and the military. Each field has its own defining characteristics given the objectives of the field of study. In sports, Rumbold et al. (2012) systematically identified and evaluated psychosocial interventions for managing stress in competitive sport performers. They grouped their collected research studies into three categories of cognitive, multimodal, and alternative interventions. Cognitive interventions included behavioral therapy, coping, goal-setting, hypnosis, imagery, rational-emotive therapy, and self-talk; multimodal interventions listed were arousal control, attentional training, centering, cognitive control, cognitive and somatic relaxation training, concentration, COPE therapy, energizing, goal setting, hypnosis, imagery, meditation, motivation, pre-performance routines, positive thinking, self-talk, stress inoculation training, team building, thought stopping, and visuo-motor behavior rehearsal; and alternative methods were anger awareness, applied relaxation, biofeedback, music interventions, personal goal management, and progressive relaxation training (Rumbold et al., 2012).

Alternatively, from a neurobiology perspective, Esch and Stefano (2010) state there are two mechanisms humans use to deal with stress, the first being through exogenous professional intervention of “mind-body medicine” and the other is through endogenous autoregulation. Physiologically, the human body passively attempts to get back to homeostasis after experiencing stress through hormone responses. However, this Behavioral, Exercise, Relaxation, and Nutrition (BERN) model includes Behavioral adjustments (pleasurable activities, social interaction, social support, friendship, love, healthy communication, arts and creativity, pacing, cognitive behavioral therapy, motivational and positive psychology), Exercise (aerobic and anaerobic physical activity), Relaxation (meditation, spirituality/belief, sleep hygiene), and Nutrition (diet, supplements – if indicated) (Esch & Stefano, 2010). The BERN model requires people to actively engage in managing their stress. Esch and Stefano (2010) also mention the assumed

inclusion in these categories of positive social support along with a belief in something or support of ‘spirituality’.

An analysis of organizational stress management was also reviewed to gain insight on how businesses are approaching stress management. Kahn and Byosiere (1992) describe a list of traits of main and moderating effects on job stress and strain such as social support, Type A behavior, locus of control, and self-esteem. Kahn and Byosiere (1992, p. 623) further describe four kinds of prevention and intervention programs which are “(a) those that attempt to alter their stressors as perceived by the individual, (b) those that concentrate directly on reducing the strains evoked by perceived stressors, (c) those that aim to alter the stress-resistant properties of the person more generally, and (d) those that are intended to improve stress-moderating properties of the interpersonal situation.” Tetrick and Winslow (2015) add that stress can be approached from a workplace intervention angle which seeks to restore depleted resources, or from a health promotion and wellness program angle which tends to be preventive and enhancing.

Finally, a military perspective is offered by Harms et al. (2013), who describe the lifestyle of military personnel and the risk factors associated with them. In their research, they recognize that because there tend to be associated risk factors for military personnel, it is important to distinguish protective factors used by servicemembers in their personality characteristics, by leadership, and by military families. This thesis focuses on an individuals’ ability to manage stress factors; thus, personality characteristics apply most. According to Harms et al. (2013), many personality factors have received a lot of attention in research regarding their impact on resilience particularly for military personnel such as negative affect, neuroticism, hope, optimism, grit, psychological capital, or positive mindset (reinforced by Smith et al., 2020, previously described). However, the two that have received the most attention are coping and hardiness. Positive techniques are strongly correlated with lower likelihood of suicide completion (Lester et al., 2011a), lower likelihood of testing positive on a drug screening, and being promoted early (Lester et al., 2011b), while hardiness, i.e., the ability to turn stress into growth (Maddi, 2007), is predictive of health outcomes (Bartone & Priest, 2001) and emotional well-being (Bartone, 1999).

B. DEMOGRAPHICS OF STUDY SUBJECTS

Sample selection criteria of this study included studies that incorporated groups of military aged population or recruitable age. To answer the first research question, it is important to understand how the military aged population is impacted by stress management behavioral techniques, but also to learn more about stressors that are impacting potential future military members and stress management methods they respond well to. Accordingly, one study that was included used elementary school children grades 4–6, one focused on differences in responses to COVID-19 stressors between preschool, school aged, and adolescent age groups, a few studies incorporated high school or college aged individuals classified as either athletes, students, or student-athletes. Finally, most of the studies incorporated subjects who were among the working age population (18-65) or in leadership type positions (e.g., caregiver, psychological professional, parent, healthcare worker, etc.). For a breakdown of the total demographics included, see Table 3. Studies with smaller sample sizes ($n < 10$) were case studies mostly of interventions for professional athletes. Studies with large sample sizes ($n > 1,000$) were one-time surveys/questionnaires distributed at a single location (e.g., medical center) or via email, while most of the studies with sample sizes in between were either an intervention of a specifically targeted population or involved multiple surveys or questionnaires over time.

Table 3. Age, Sample Size, and Employment Tenure figures.

Age Range (Years) (Avg; SD)	Sample Size Range (Avg; SD)	Employment Tenure (Years) (Avg; SD)
9.15 – 68.34 (32.49; 13.67)	3 – 1,632 (266; 440.15)	8.8 – 13.04 yrs. (11.12; 1.88)

Types of populations varied, incorporating many different perspectives on stress management behavior techniques including caregivers, athletes, students, and workers. The caregiver population included parents who offered insight on their children’s stress coping strategies and psychological symptoms during COVID-19. A group of dementia patient caregivers, e.g., spouses or children of dementia patients who were giving care to the dementia patient, were given the Coaching, Advocacy, Respite, Education,

Relationship, and Simulation (CARERS) intervention to train informal dementia caregivers. Three studies involved healthcare workers. The first analyzed boundary dynamics contribution to burnout and how managing boundaries can help overcome stress. The second was an intervention of building trust with new employees called Buddy Care at a military treatment facility, and the final one was an intervention of Mind-Body Medicine offered at Navy Medical Center San Diego. Finally, a multi-national panel of expert sport psychology professionals were given questionnaires to help define self-care, and offer common challenges and strategies to develop, implement, and foster self-care among sport psychology professionals (Quartiroli et al., 2021). These groups were selected to seek insight into how leaders in the military can manage their own stress levels while also having to understand and help manage stress levels of their employees.

Athletes that were included in this study were junior elites, Olympians, and professionals. The sports in which the athletes participated included cricket, golf, soccer, and anyone who was willing to participate from one Olympic training facility. Athletes were specifically targeted due to their unique exposure to stress from self-induced stressors in performance and stress induced from external sources such as expectations from the media, coaches, or teammates. This is relatable to the military lifestyle because servicemembers are confronted with many of these same issues such as necessity to perform under pressure, anxiety from such pressures, and high expectations from coworkers and supervisors.

Students were chosen from a wide variety of samples. For example, one study incorporated grades 6 and 9 who were given transformative life skills which is a mindfulness-based program intended to reduce absences and improve engagement in the classroom (Frank et al., 2017). One study involved high school girls who were offered an intervention of self-compassion training to understand its impact on academic resilience and mental vitality (Saffari Bidhendi et al., 2022). The five college-aged group studies were interventions of mental skills for college athletes, captains, and coaches (Fogaca, 2011); coping strategies and their impact on academics (Alarcon et al., 2013); an intervention by State-of-Mind, Ireland (SOMI) workshop which offered “mental health and well-being support” (Breslin et al., 2021); effectiveness of the PATH program on resilience (Gerson

& Fernandez, 2013); and effectiveness of “The Mindful Self-Compassion” program on academic motivation, stress, and self-compassion (Shahid & Farhan, 2022). One additional and unique college-aged study involved coloring mandalas which showed the possibility for creating a meditative state (Curry & Kasser, 2005).

Per the questions previously discussed for this thesis, the primary objectives for this analysis are to recognize stress management techniques which can be adapted toward enabling Total Sailor Fitness; what combination of said techniques can help in managing stress of sailors; and how these techniques compare to what is currently available to sailors. Given how sailors can take advantage of this research is the primary focus of this study, this analysis will focus generally on what techniques were discovered through this review and how they can be applied under various circumstances relatable to Navy personnel. As such, the following categories will be used to explain the objectives of this thesis: general categories of techniques, techniques that can be done individually vs. in a group and in which environment (work, home, school, etc.), and to whom each technique is most aptly applicable. Upon further analysis, it can be easily observed that many studies will fit in multiple categories and can apply to more than one TFF domain; however, this analysis will try to distinguish each study as much as possible.

C. LITERATURE REVIEW RESULTS

Upon completion of the literature review, 10 stress management technique categories became apparent which are listed and defined in Table 4. This list contributes to the first research question of “What are effective stress-optimization and recovery techniques that can be adapted to Total Sailor Fitness?” The descriptions associated with each category offer further insight on which techniques are most likely to be effective in building stress tolerance and managing acute stress response among sailors, which is question number two. Question three will be discussed in the next section based off the results from the exploratory questionnaire to indicate how these behavioral techniques compare to what is currently being used by sailors.

Table 4. Stress management technique descriptors

Category	Definition	Techniques/ Associations	# Of Studies
Mindfulness	“The psychological capacity to stay willfully present with one’s experiences, with a non-judgmental or accepting attitude, engendering a warm and friendly openness and curiosity” (Zenner et al., 2014, p. 1).	Incivility, injustice, sleep, psychological detachment, emotion regulation, socially accepted	10
CBT	A recognition of the connection between attitude and emotional response given the interpretation of the event.	REBT – rational emotive behavior therapy, judgement, alternate beliefs	3
Social Resilience	“The capacity to foster, engage in, and sustain positive relationships, and to endure, recover from, and grow as a result of life stressors and social isolation” (Cacioppo et al., 2011).	Positive relationships, grow, recover, coping, social support, boundary work	5
Physical Activity	PA is defined as activity that increases the heart rate and brings on a sweat (U.S. Department of Health and Human Services, 2008)	Movement, Brain Wave Vibration, Job Burnout, Depression, pro-social and emotional behaviors, transformative life skill	3
Program Intervention	An approach to stress management which is organized by an individual or organization professional(s) with expertise in the targeted stress management technique and is geared toward being generalizable or reproducible to a larger population.	ENHANCE, PATH, Buddy-care, PIT, Social resilience, CARERS, self-care, thriving, SWB (happiness)	6
Meditation and MBM	Meditation – “Deeply concentrating on an experience that is soothing.” (Curry & Kasser, 2005); Mind-Body Medicine – “a variety of mindfulness practices” (Ram et al., 2021) which are designed to “provide a low stigma approach to combatting the psychological	Mandala, mindfulness, guided imagery, loving-kindness, use of mantras, autogenic training, progressive muscle relaxation, mindful movements, stress physiology and meditation techniques,	3

Category	Definition	Techniques/ Associations	# Of Studies
	wounds...while enhancing participants' stress tolerance and ability to manage their emotional responses to difficult life events" (Millegan et al., 2021).	recuperative sleep and cognitive restructuring, enhancing social support and effective communication skills, journaling, yoga, Qigong	
Emotion Regulation	Subjects ability to "not [act] upon an impulse straight away" ... and being "able to infect others with emotions" and "strategically [attempt] to regulate the emotions of those they transacted with for positive organizational outcomes" (Wagstaff et al., 2012).	psychological contract, contagious emotion regulation, and emotion regulation for building strong relationships. Interpersonal relationships, person-organization dynamics, emotional intelligence	1
Mental Health Awareness	Education in mental health issues such as signs and symptoms as well as resources available to aid in personal management and leadership role effectiveness	State of Mind, literacy, psychological, social, and emotional well-being, promotion, prevention, and early intervention	2
Self-Care	"The purposeful engagement in activities grounded in one's values. It involves prioritizing, developing, preserving, protecting, monitoring, and restoring holistic (i.e., physical, psychological, social, spiritual, and emotional) health, wellbeing and satisfaction with work and life" (Quartiroli et al., 2021).	Self-compassion; mindfulness, accepting emotions, confronting emotions, personal responsibility skills, self-awareness, academic stress, academic motivation, knowledge based, health, profession supporting, intrapersonal	3
Coping	"A process in response to a perceived situation in which one tries to change the relationship between a stressor and oneself so as to be less stressful (Lazarus & Folkman, 1984).	problem-focused, avoidance, social support, emotion focused, task oriented, active coping, denial, behavioral and alcohol disengagement	3

1. Mindfulness

This method was largely considered beneficial for the populations in these studies, which are similar to the typical Sailor. There was a contradiction between Lyddy et al.

(2021) who explain that there is a cost in self-control depletion through emotion regulation of surface acting, a trait often found in mindful individuals, whereas Hulsheger et al. (2013) states surface acting may be a necessary evil of sorts. While Hulsheger et al. (2013) agree that surface acting causes emotional exhaustion, it is also the link between mindfulness and job satisfaction. This argument is further supported by Long & Christian (2015) who note that mindfulness buffers the effect of ruminative thought and negative emotions. Furthermore, Hulsheger et al. (2014) shows that mindfulness during the day at work allows for psychological detachment from work in the evening and leads to better sleep quality and quantity. Though cyber leisure in the evening also aids in psychological detachment, it instigates bedtime procrastination which is alleviated by displaying traits of mindfulness which can lead to decreased bedtime procrastination (Liu et al., 2020). Regardless of the effectiveness or impact of mindfulness, Luiselli et al. (2017) clearly indicate the social validity and acceptability of it in high school students who are among the primary recruiting population for the military.

2. Cognitive Behavioral Therapy

To effectively offer cognitive behavior therapy (CBT), it is first important to recognize that one's cognitive set or attitude has a direct effect on their emotional reaction and behavior (Neil et al., 2013). It is also important to recognize that it is not necessarily the particular event which causes an emotional disturbance, but one's judgement of it (Turner & Barker, 2013). Therefore, it is important through rational emotive behavior therapy (REBT), a mode of CBT, to recognize the irrational beliefs and target them, then replace them with rational alternate beliefs (Turner et al., 2020) to improve performance under conditions which instigate such irrational beliefs like athletic performances or, in the case of the military, combat or task evaluations. Though all 3 of these studies had small sample sizes incorporating only 3 or 4 subjects, they each showed within subject statistical significance in reduction of performance anxiety and social anxiety (Turner et al., 2020), decrease irrational beliefs and cognitive anxiety (Turner & Barker, 2013), and transform emotional orientation from debilitating to facilitative (Neil et al., 2013).

3. Social Resilience

Social Resilience is addressed and defined by Cacioppo et al. (2011) as “the capacity to foster, engage in, and sustain positive relationships, and to endure, recover from, and grow as a result of life stressors and social isolation” in Cacioppo et al. (2015, p. 90). One factor that seems to contribute to this concept is social support which was one of the three coping strategies recognized by Kristiansen et al. (2012) among professional U.S. soccer players. The common stressors among these players included contracts, draft, league and team structure, coach-athlete interaction, salaries, and travel demands (Kristiansen et al., 2012). Though there are some slight differences in how they are titled such as “coach-athlete interaction” or “league and team structure,” many of these stressors overlap well with those of military members, and thus social support may likely be a common coping strategy among servicemembers as well.

Fogaca (2021) specifically addresses the issue of coach-athlete interaction through intervention sessions with team captains focusing on “leading by example” and “vocal leadership” while sessions for coaches focused on “communication with athletes regarding mental-health-related issues and how this type of communication relates with better performance outcomes” (Fogaca, 2021, p. 10). With proper social support, particularly from a supervisor, healthier diurnal cortisol patterns can be experienced by employees which ultimately led to lower BMI increases over the span of 6 years (Gonzalez-Mule & Yuan, 2022). This indicates that supervisor support can lead to healthier employees through the physical TFF domain and would aid in progress toward the 21st Century Sailor Office mission. Finally, physical, temporal, and knowledge-based boundary violations lead to employee burnout, however appropriately paired boundary work tactics to the boundary violations can “redefine boundaries and forestall burnout (Rapp et al., 2021). One important argument outlined by Cacioppo et al. (2015) is that “Reducing maladaptive social cognition, such as unrealistic perceptions of others or a preoccupation with self-preservation, was more effective than interventions focused on enhancing social support, and resulted in improved basic social skills and increasing opportunities for social contact.”

4. Physical Activity

One purpose of physical activity is to implement a “social-emotional wellness promotion program,” known as a transformative life skill, in one case through the implementation of yoga on adolescents and can be used to assess social and emotional behaviors as well as organizational integration (Frank et al., 2017). Alternatively, simply moving in a rhythmic fashion known as Brain Wave Vibrations can lead to quantitative improvements on stress such as increases in nitric oxide, and qualitative indicators such as lower depression and anxiety indicator scores, lower reported stress levels, and greater positive affect (Lee et al., 2015). Regardless of the activity engaged in, if an employee is staying physically active, they are less likely to experience job burnout or depression, and the more physically active they are the less burnout and depression which is experienced (Toker & Biron, 2012).

5. Program Intervention

When aiming to target many individuals with similar or related stressors, it may be more beneficial to apply an approach to stress management which is organized by an individual or organizational professional(s) with expertise in the targeted stress management technique and is geared toward being generalizable or reproducible to a larger population. Such approaches discovered in this thesis included: ENHANCE, PATH, PIT, Buddy-care, CARERS, and social resilience. Each has their own strengths, weaknesses, and unique applications which will be outlined here, but further detail can be found at their associated references.

Enduring Happiness and Continued Self-Enhancement (ENHANCE) is a positive psychological intervention (PPI) program designed to improve subjective well-being (SWB) or happiness by targeting gratitude, self-compassion, alignment of behavior with core values, goal pursuit and mindfulness (Heintzeman et al., 2020). This program follows a 12-week curriculum guided by a workbook and showed positive results supporting its efficacy whether administered in-person or online particularly in life satisfaction measures, however effect on affect diminished over 6-months (Heintzeman et al., 2020). Training to thrive may be an alternative method to approaching similar targets. The Program for

Accelerated Thriving and Health (PATH) promoted thriving by introducing pessimistic, optimistic, and personal control explanatory styles to offer adaptive mindsets toward various circumstances (Gerson & Fernandez, 2013). Though optimistic and pessimistic explanatory styles did not predict depressive symptoms which could have been evidence for improving resilience, the program could be completed in just 3 short sessions and could be run by a non-clinician (Gerson & Fernandez, 2013).

Some circumstances present with specific stressors that must be targeted such caregivers for dementia patients, or in the military context this could be applied to leaders who inherently will encounter a variety of circumstances among their subordinates which are not predictable or almost entirely out of the leaders' control. The Coaching, Advocacy, Respite, Education, Relationship, and Simulation (CARERS) program offers problem-solving and simulation of stressful events as well as consultation through circumstances either past or present during group sessions (Chiu et al., 2013). This intervention was most beneficial to individuals who had "more compromised baseline scores," however the age of the sample group was on average 68 years old, and the program had to be run by professional group therapists (Chiu et al., 2013). However, pressure inurement training (PIT) can also be used to target specific, known stressors athletes might encounter to enable better threat appraisal, improve self-confidence, helped athletes become more familiar with common problems, and how to deal with performance pressures psychologically and emotionally (van Rens et al., 2021). This study was only conducted on 4 female cricketers and showed no evidence of an effect on the use of suppression; however it did show patterns of generally being beneficial for the athletes (van Rens et al., 2021) and overlaps with principles from the WT program already being implemented by the U.S. Navy.

Sometimes circumstances arise where stressors may not be as clearly defined, but are necessary to be prepared for, in which case social resilience or peer-interventions may be more appropriate. "Navy medical professionals are known to neglect self-care" according to Villaruz et al. (2020, p. 1428), therefore having a predesignated program for peer intervention may be beneficial for building strategies to cope with daily stressors (Villaruz et al., 2020). Unfortunately, there was not a large enough sample an missing data which contributed to a lack of statistical significance, but the program was frequently

requested by other commands and a “[Caregiver Occupational Stress Control] Instruction was approved by the Navy Surgeon General” Indicating the desirability and acceptance of related programs (Villaruz et al., 2020, p. 1428). Similarly, if warfighters deploy to a foreign nation, they are made aware of the culture differences to reduce some of the culture shock upon arrival. Cacioppo et al. (2015, p. 90) state that intervening with social resilience has a “small but significant improvement in social cognition” including “increased empathy, perspective taking, & military hardiness” along with “increases in knowledge about and decreases in prejudice toward [the targeted culture].” Though the affect size was small, had relatively short term results, and only applicable to the training in resilience toward the targeted culture, valuable insight came from recognizing that individuals who had never deployed before had greater improvements than those who had indicating that early intervention may be more beneficial (Cacioppo et al., 2015).

6. Meditation and MBM

Coloring mandalas and plaid designs or any other structured and reasonably complex design may actually induce a meditative state which can reduce anxiety (Curry & Kasser, 2005). Active-duty service members of primarily the U.S. Navy and Marine Corps who reported experiencing significant perceived stress or chronic pain were introduced to a mind-body medicine (MBM) program which focused on a new meditative modality each week for 7 weeks including mindfulness, guided imagery, loving-kindness, use of mantras, autogenic training, progressive muscle relaxation, and mindful movements (Millegan et al., 2021). Subjects in both the stress resilience and pain management groups “had significant improvement in most outcomes (perceived stress, response to stressful experience, functional impairment, sleep disturbance, depression, PTSD, and anxiety symptoms; and each quality of life domain aside from social relationships” (Millegan et al., 2021, p. 186). Conversely, another MBM program which had a more well-rounded approach to MBM incorporated topics of stress physiology and meditation techniques, recuperative sleep and cognitive restructuring, enhancing social support and effective communication skills, journaling, yoga, and Qigong for 2 hours a week over 6 weeks (Ram et al., 2021). It was found that “Participants showed improvements on scores of perceived

stress, resilience, anxiety, somatic symptoms, quality of life, and burnout variables” (Ram et al., 2021).

7. Emotion Regulation

Despite the arguments for and against surface acting previously mentioned under the mindfulness section, emotion regulation could prove to be a beneficial skill for person-organization dynamics (Wagstaff et al., 2012). Building and maintaining interpersonal relationships are very important within organizations and can be done with emotion related abilities such as “managing conflict, communicating emotion, managing and expressing emotion for the psychological contract, contagious emotion regulation, and emotion regulation for building strong relationships” (Wagstaff et al., 2012, p. 26). This study specifically pointed toward “[developing and maintaining] more successful interpersonal relationships during a period of organizational change” and shows distinct overlap with emotional intelligence (Wagstaff et al., 2012).

8. Mental Health Awareness

Mental health is a significant issue to undergraduate students and can be an even higher strain on student-athletes particularly during adverse times like injury or when anticipating intense competition (Breslin et al., 2021). It was determined that introducing students to signs and symptoms of stressors, self-management of difficult symptoms, and self-management resources and strategies improved intent to self-manage (Breslin et al., 2021). Alternatively, if coaches of athletes have gained literacy in mental health, they are more equipped to provide “promotion, prevention, and early intervention via role breadth and role efficacy” however literacy was not related to helping behaviors (Duffy et al., 2021, p. 2). College aged students are of the same age as young, enlisted service members, and service members are dealing with similar stressors as student athletes including tests, injury, intense competition, depression, and anxiety among others. Thus, service members could also benefit from improved exposure to mental health literacy, and having leadership who is capable of identifying and intervening in such issues.

9. Self-Care

Self-care can have a positive effect on both the personal and professional life of a sailor when properly applied based on the definition and results from Quartiroli et al. (2021). For that study, a multi-national panel of sport psychology professionals agree that self-care must be a deliberate and intentional act based on one's personal values which must be established outside of work, and can be categorized as intrapersonal, knowledge based, health, or profession supporting (Quartiroli et al., 2021). When self-compassion was applied in response to the COVID-19 pandemic following Kristin Neff's "The Mindful Self-Compassion Workbook," there was no significant difference in self-compassion, however there were positive results in academic motivation and academic stress (Shahid & Farhan, 2022). Similarly, Saffari Bidhendi et al. (2022, p. 327) found that when high school girls were trained in self-compassion, results showed "an increase in academic resilience and mental vitality" by applying the concepts of "mindfulness, accepting emotions, confronting emotions, personal responsibility skills, and self-awareness."

10. Coping

Among first year college students, active coping was positively related to GPA performance, while denial, behavioral and alcohol disengagement were negatively related to GPA (Alarcon et al., 2013). It was found that professional U.S. soccer players used problem-focused, avoidance, and social support coping strategies to deal with the common stressors of travel, drafting and contracts, team issues, salaries, and coach issues (Kristiansen et al., 2012) which overlaps with many similar stressors presented to military members. When comparing coping strategies for COVID-19 of preschoolers, school-aged children, and adolescents it was found that adolescents were more accepting of current events and their reactions were more related to worry and uncertainty (Delvecchio et al., 2022). Similarly, emotion-focused strategies were linked to higher internalizing (i.e., anxiety, mood, and sleep difficulties) externalizing (i.e., behavioral) and cognitive alterations, however across all ages task-oriented strategies worked best (Delvecchio et al., 2022).

D. QUESTIONNAIRE RESULTS

The questionnaire was administered to two different commands with both commands supporting a 24-hour watch floor with minimal manning that required 12-hour shifts. Thirty-nine participants completed the survey, 21 from FWC and 18 from NCTS. Thirty-five were enlisted personnel and twenty-five were male with the mean age being 28.9 (SD = 8.0). For further breakdown of the demographics, see Table 2.

When asked to mark any of the measures listed used to relax, decompress, and manage stress (see Figure 1 for complete list and results), nine answers had a result of 50% or greater response rate. Listed in order from highest to lowest percentage were Humor (69.23%), Engaging in hobbies (69.23%), Playing video games (64.10%), Snacking to relieve stress (61.54%), Deep breathing (53.85%), Spending time with family (53.85%), Aerobic exercise (51.28%), Drinking coffee (caffeinated drinks) (51.28%), Positive thinking (51.28%). The lowest four ranking measures, all of which were under 10% consisted of: Family counseling (7.69%), Take on extra work (7.69%), Aspirin (2.56%), Financial counseling (2.56%), and Emergency financial planning (2.56%).

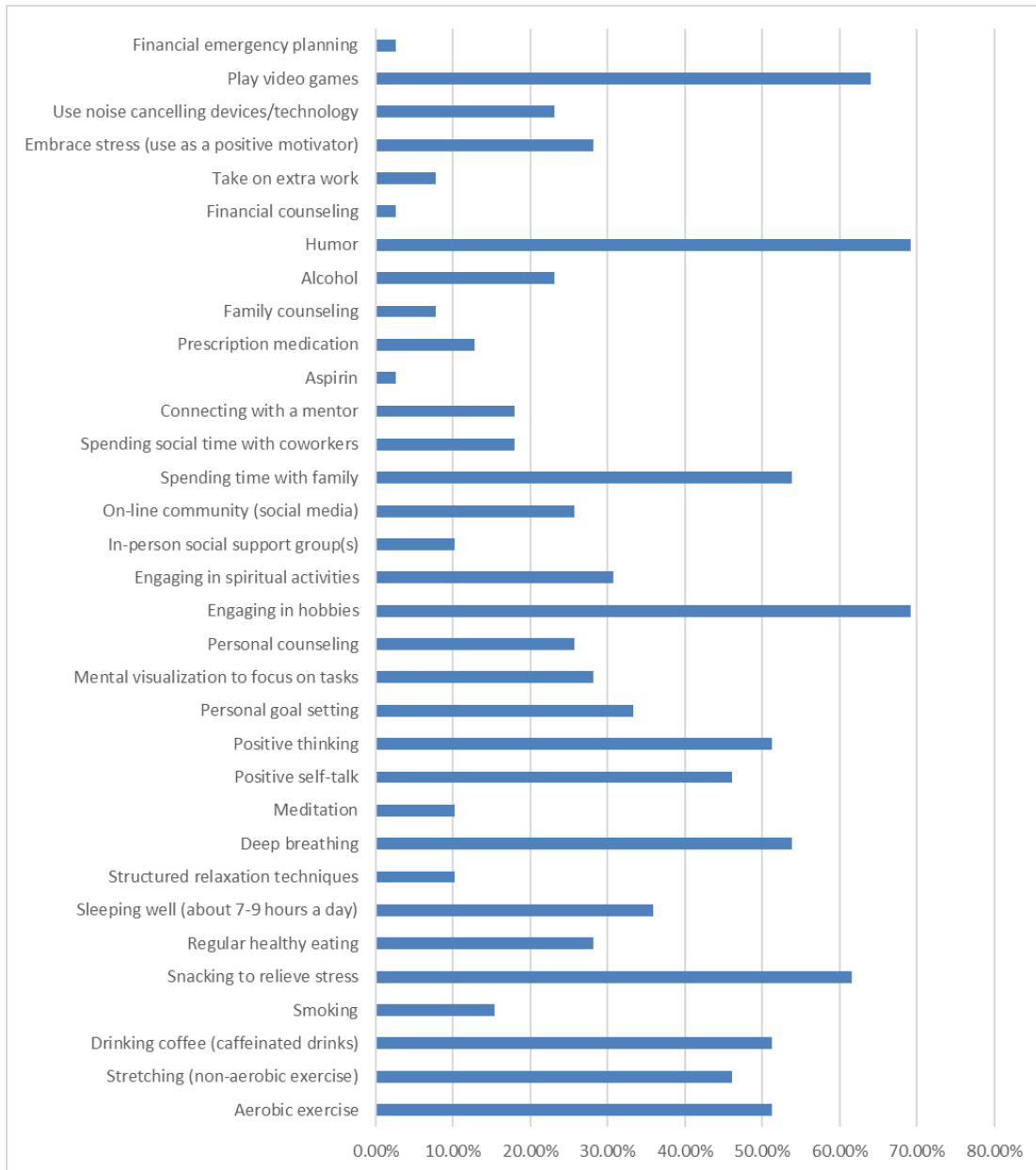


Figure 1. Question 7: Measures used to relax, decompress, and manage stress.

The next two questions asked participants to rank their top three choices among the same list and to indicate their ranking (1, 2, or 3) as most frequently used or most effective, based on their subjective opinion. This question led to some confusion as some individuals continued to merely check off items or ranked multiple items at the same rank, for example marking 5 items as number 1. If the participant simply checked the box for questions 8 or

9 (see Appendix for question reference) instead of ranking as instructed, the techniques were listed in the order they were written on the list (top first, bottom last). If participants indicated multiple items at the same rank, they were kept as such and contributed to the total count of that rank (i.e., if an individual ranked five items as number one, they were all counted as a number one choice). Figures 2 through 7 show the results of the top 3 or 4 choices of the most frequently used measures, and the measures the participants deemed to be the most effective.

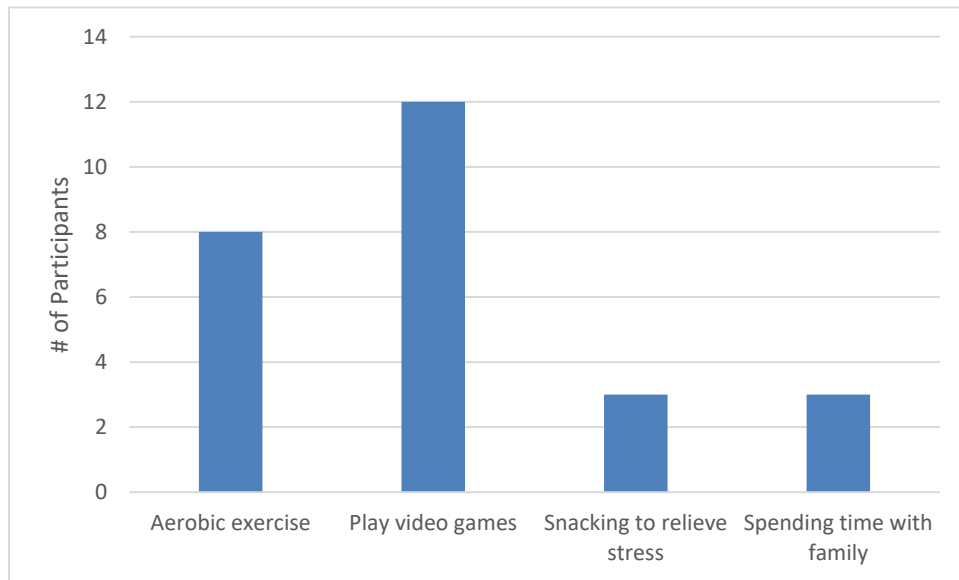


Figure 2. Question 8a: Most frequently used measures, ranked 1st

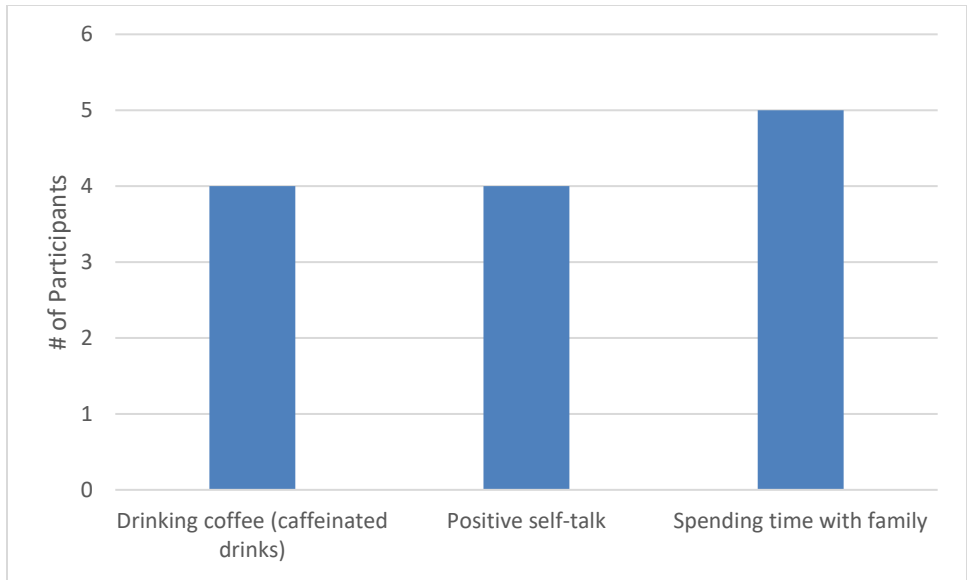


Figure 3. Question 8b: Most frequently used measures, ranked 2nd

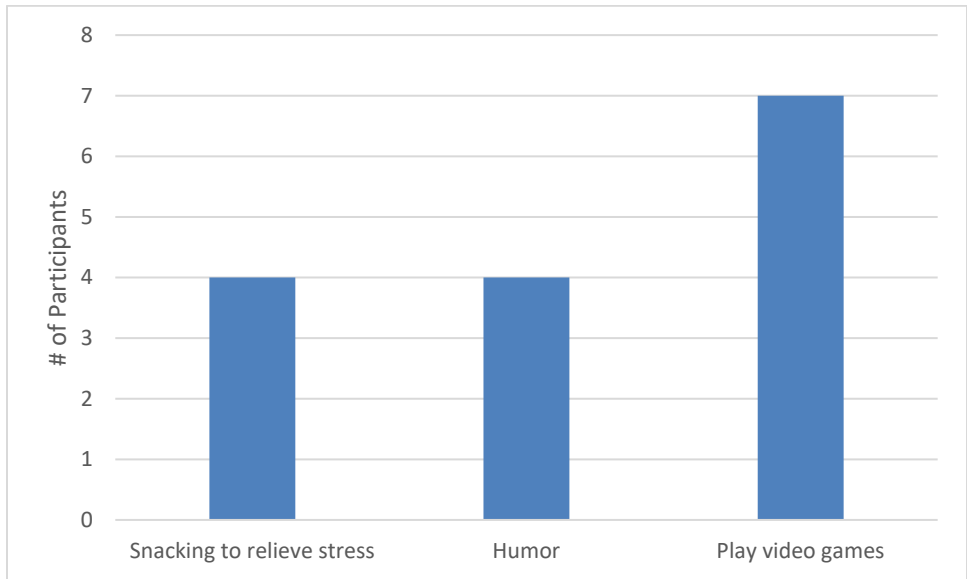


Figure 4. Question 8c: Most frequently used measures, ranked 3rd

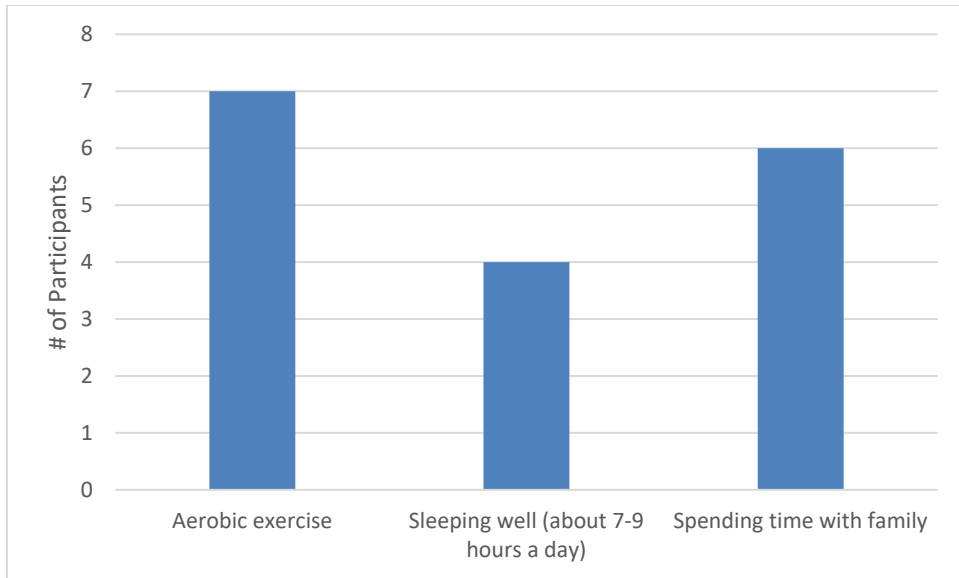


Figure 5. Question 9a: Most effective measures, ranked 1st

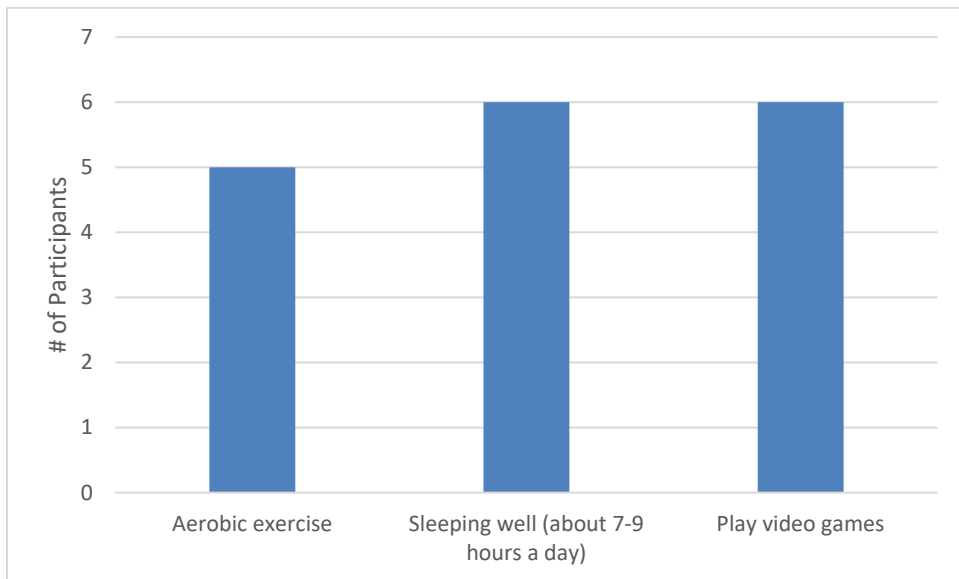


Figure 6. Question 9b: Most effective measures, ranked 2nd

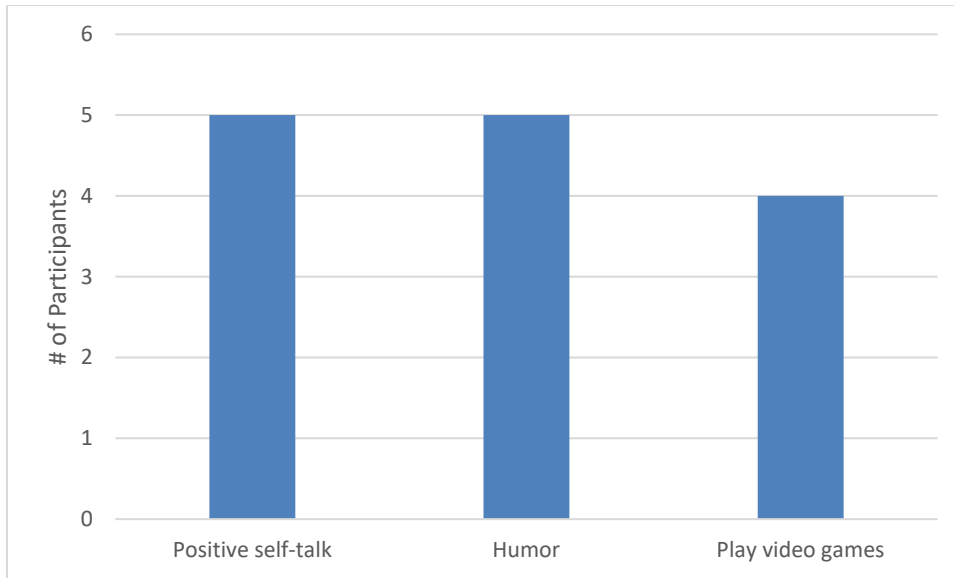


Figure 7. Question 9c: Most effective measures, ranked 3rd

Finally, the last section of the questionnaire (questions 10–13) required open-ended answers for knowledge and use of stress management resources available at the command location as well as number of hours in the last month spent doing the top three indicated measures at home or at work (see Tables 5–7). The TFF domains were used to simplify categorization of the data and to tally how many measures were used in each. A diverse spectrum of participants used stress managements measures across the Social, Physical, Environmental, and Psychological domains as self-reported “other” measures. However, the data becomes a bit more telling when inquiring about knowledge versus availability of resources at the command. Participants indicate a fair amount of knowledge of resources in the Social, Physical, and Psychological domains; however, the majority of knowledge by far is in the Social and Psychological domains. When inquiring about actual usage of “resources available at the command,” the majority of responses by far fell in the “Other” category and primarily consisted of participants stating they did not use any resources or left it blank or marked “N/A.” Eight participants indicated being unsure of “what resources are available at the command,” and two similar markings were seen under “resources used at command.”

Regarding “hours spent over the last month doing the top three measures at home” or “at work,” it is worth noting that there seemed to be some confusion from participants about the question. The question stated, “During the last month, how many total hours...” there was still a question about what the time frame was to be reported on, and some answers seem to indicate hours spent in the last week as opposed to the last month. Additionally, one participant specifically noted their frequency over the last week as opposed to number of hours. With that in mind, most participants reported spending somewhere between 0 and 22 hours either at work or at home doing their top three stress management measures, and there was a greater distribution of hours spent at home than at work as displayed in Figures 8 and 9.

Table 5. Question 10: Other techniques used to relax, decompress, and manage stress

TFF Domain	Examples	Total
Social	Spending time alone (3) Family: spending time with family, talking to family, vent to mom, spending time with girlfriend, time with pet (6) Talking: talk through the problem in Spanish, talk stressors to non-biased party, get a different POV (3) Listen to people (1) Humor (1) Watching YouTube (1) Hobbies: gun range, shop (2)	17
Physical	Voice exercise: yelling, singing (2) Relax: naps, massage (2) Lifting (1) Outdoor activities: biking, running, hiking, play frisbee, walks/walking dog, general outdoor activities (12) Sex (1)	18
Environmental	Listen to music: relaxing music, solfeggio frequencies (9) Water use: cold showers, hot bath, taking a shower, bubble bath (4) Go for drive/ride motorcycle (6) Aroma therapy (2) Light scented candles (1) Watch: anime, movies/tv (2)	24

TFF Domain	Examples	Total
Medical and Dental	0	0
Spiritual	0	0
Nutritional	Glass of wine (1) Smoothie drinks (1) Preparing food and cooking (1) Eating sweets (1)	4
Psychological	Cleaning (4) Internally focused: planning, crying, zoning out, mantras, write out what is making me stressed (5) Reading: stoic philosophy, general reading (4) Watch motivational video (1) Activity: painting, playing guitar, schoolwork or self-study, projects (4)	18
Financial	0	0

Table 6. Question 11: Known stress management support tools or programs available at location.

TFF Domain	Examples	Total
Social	Fleet and family (11) Military OneSource (2) MWR (3) CPO mess (1) Removing self from social activities (1) Within command: open door policy, divisional support (2) Mentor (1)	21
Physical	Hiking (1) Exercise: gym, structured physical fitness, general (6) Yoga (1) Pool (1) Rage room (1)	10
Environment	Beaches (1)	1
Medical and dental	Medical (3) Out in town mental health referral (1)	4
Spiritual	Chaplain (1)	1
Nutritional	0	0
Psychological	Therapist (6) Mental health clinic (2) Counselor: general counselor, life counselor, MFLC – military family and life counseling (8) Command psychologist (1) Focus (1)	19

TFF Domain	Examples	Total
	Books (1)	
Financial	0	0
Other	OSC (1) Unsure (8)	9

Table 7. Question 12: Most frequently used stress management support tools or programs available at location.

TFF Domain	Examples	Total
Social	MWR (3) Family center (1) Fleet and family (1) Playing with pets (1) Speaking with mentor (1) Divisional support (1) Talking with friends (1)	9
Physical	Exercise: gym, during shift, physical fitness (6) Hike (1) Rage room (1)	8
Environmental	Beach (1) Listening to solfeggio frequencies (1)	2
Medical and dental	0	0
Spiritual	Chaplain (1)	1
Nutritional	Grocery shopping (1) Smoking (1)	2
Psychological	Counseling: therapist, military life counselor, command counselor, general counseling (7) Psychiatrist (1) Self-help book (1)	9
Financial	0	0
Other	None or N/A (16) Not sure what's available (2)	18

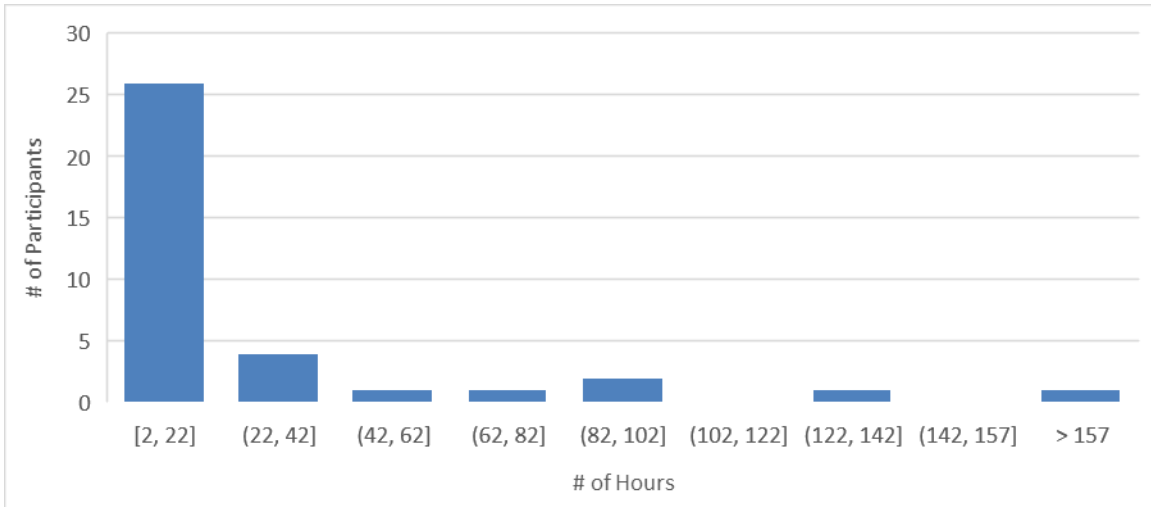


Figure 8. Question 13a: Number of hours reported doing the top three measures over the last month at home.

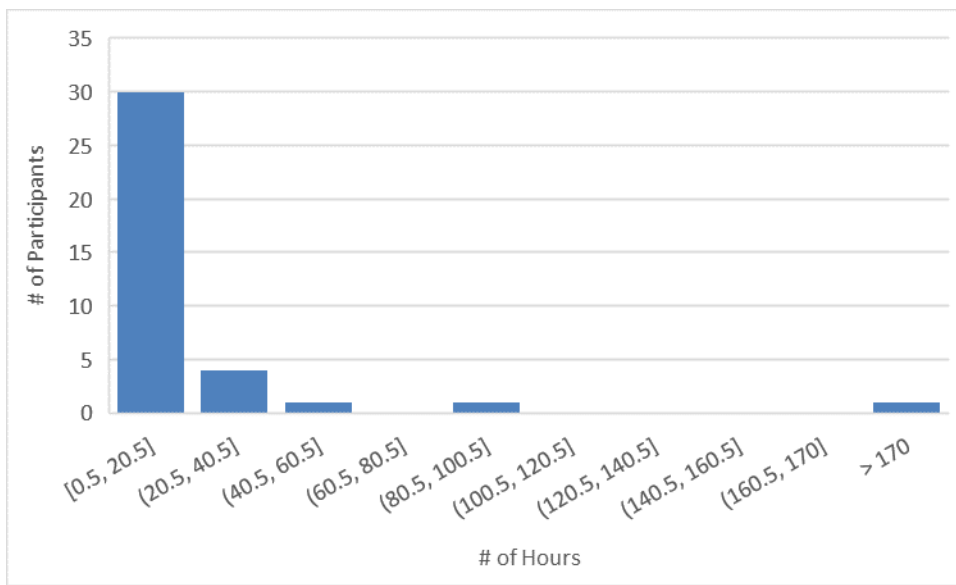


Figure 9. Question 13b: Number of hours reported doing the top three measures over the last month at work.

V. DISCUSSION OF FINDINGS

This section is going to provide answers to the three primary research questions for this thesis: (1) what are effective stress-optimization and recovery techniques that can be adapted to Total Sailor Fitness?; (2) what combination of behavioral techniques are most likely to be effective in building stress tolerance and managing acute stress response in sailors?; and (3) How do these behavioral techniques compare to the techniques sailors are currently using? Stress optimization recovery techniques in the literature review primarily consisted of techniques which belonged to the psychological, spiritual, and social domains. The categories of techniques that presented themselves in the meta narrative analysis which could be adapted toward Total Sailor Fitness include mindfulness, CBT, social resilience, physical activity, program intervention, meditation and MBM, emotion regulation, mental health awareness, self-care, and coping. A pilot survey was conducted; however, further questionnaires and surveys will provide better insight to how literature compares to stress management resources utilization. Figure 10 shows key terms of the TFF domains.



Figure 10. Total Force Fitness domains and associated key terms. Source: CHAMP (2022)

A. STRESS TECHNIQUES AND HOW THEY ARE USED

Most stress optimization and recovery techniques were found in the psychological (31 studies), spiritual (25 studies), and social (20 studies) TFF domains. In the psychological domain, “proactive recovery for thriving” and “self-actualization” were popular key terms among the studies incorporated in this thesis. Many studies discuss specific programs, help build resilience, or are geared toward a specific modality of stress management which can easily be taught to a large group. Programs including ENHANCE, PATH, and CARERS are easily applied to a group potentially during an annual stand down or on an as needed basis, and PATH does not need to be run by a professional clinician. Other techniques are more specifically intended to build a particular mindset like mindfulness, happiness (subjective well-being), or self-compassion. These practices include things like yoga, meditation, engaging in positive-self talk, or MBM which can all be easily learned in a short timeframe, and practiced on a regular basis without any additional external guidance beyond the initial introduction. Practicing active coping,

establishing boundaries, and engaging in optimism and joy also could lead to greater rates of success in performance either in a military training environment or in an academic realm. Whatever the modality is that is taught to a group, it has been shown that simply exposing individuals to some kind of technique improves not only their intention to stay engaged with that activity (Breslin et al., 2021), but also improves performance simply by being engaged.

The most important aspect in the spiritual domain seems to be the ability to create space between the individual and the cause of the stressor. The spiritual domain does not require affiliation with any religious structure, but rather an identity with a greater purpose or larger understanding of one's own role within the world around them. The key term of "ability to cope" is related to most of the techniques in the spiritual domain. Some of the incorporated studies in this thesis could aid sailors' ability to grow in such an area particularly starting with means of building a more resilient mindset such as self-compassion, effectively managing one's emotions when under stress, or establishing boundaries to be able to find one's personal identity rather than permit intrusions from external sources. Leaders can promote an environment which allows sailors to cultivate better spirituality by having increased literacy of mental health, creating an emotional environment of optimism and joy, and learning about how their sailors cope with stressful events (emotion-oriented or task-oriented) to help aid them through the stressful events. Ultimately, a variety of techniques from MBM practices, physical activity, Cognitive Behavioral Therapy (CBT), or mindfulness can create a space for spiritual growth. These practices could allow a Sailor to focus on problems at appropriate times to grow professionally and maintain their personal identity to grow in as well.

Finally, the social domain is largely focused on the individuals' interaction with the people around them. Most research in this domain was related to the term "unit cohesion." Engaging in personal through emotional well-being or physical activities like yoga help in building interpersonal relationships. However, it's also important to appreciate that the organization can directly affect the individuals by first understanding how to avoid overtasking, then recognizing situations which may instigate retaliatory behavior, and finally instilling proactive supervisors who offer healthy support. It must be understood

that a wide variety of stressors can impact a unit or team such as that often found in the military. Similarly, offering knowledge in a wide variety of techniques such as yoga, meditation, self-care, or mindfulness improves the individual's ability to cope with group stressors, thus also improving their willingness to work, and interpersonal relationships. Though mindfulness is a willful presence in an experience (Zenner et al., 2014, p. 1), it can be associated with self-control depletion when supported by surface-acting (Lyddy et al., 20221), but can still be a powerful tool. Other tools which build personal growth involve exogenous aid such as social or supervisor support, and early peer intervention which enable individuals to feel safer and become contributing members of the group.

Regarding combinations of behavioral techniques available to build stress tolerance, some challenges exist but implementation of them can lead to positive results. Some studies presented techniques which must be run by professionals such as the variety of cognitive behavioral therapy sessions like REBT or others that involve specific therapeutic interventions like the CARERS or ENHANCE program. When such resources are required, it is likely techniques will be more difficult to execute given the limited resources already available to the Navy with insufficient manning and manpower (Fletcher, 2018). This is particularly due to competition from civilian sector jobs (Thompson, 2018). Conversely, the PATH program was specifically designed to be run by a non-clinician, has been proven effective among a young military aged type population, and can be completed within just 3 quick sessions to improve optimistic and personal control explanatory styles, resilience, and thriving (Gerson & Fernandez, 2013). Other easily implemented categories of stress management are self-care (Quartiroli et al., 2021) and self-compassion (Shahid & Farhan, 2022; Saffari Bidhendi et al., 2022) which can be improved through resilience training, but probably most effective when properly encouraged by leadership.

Given reducing suicide attempts and completions is a major concern presented in NAVADMIN 222/19, targeting mental health of sailors and providing support could help with their professional success and personal well-being. Regardless of the modality, simply implementing any technique would likely be beneficial as many of the practices were well received by the subjects in each study. Promotion of mental wellbeing techniques also means greater likelihood of sustained intention to practice them (Breslin et al., 2021). If

properly executed, one metric of success of such programs would be a reduction in suicide attempts and completions. As such, despite limited resources, resilience training, mental health, and well-being must be prioritized to support the most valuable asset to the fleet.

Leadership is a specific area worth investing time and money into implementing improved stress management behavioral techniques. This idea is supported by the forward-thinking DODI 6400.09 policy already in place and is further expanded upon through this research. To be most economic, providing one-on-one training to top leaders, and a “classroom-based group delivery format” to the rest of the fleet would incorporate the two most effective means of delivering resilience-building programs (Vanhove et al., 2016). As professional psychologists need to practice effective self-care to provide better care for their patients (Quartioli et al., 2021), so do leaders to better support their subordinates. Creating an environment of joy and optimism is best for both safety and productivity (Adler et al., 2022). Additionally, it has been shown that supervisor support improves subordinates’ BMI and helps regulate cortisol (Gonzalez-Mule & Yuan, 2022). Leadership can provide time for their sailors to practice known effective techniques like MBM, yoga, meditation previously discussed, offer encouraging support, and create an environment of optimism and joy, or promote self-care and self-compassion activities to be done outside of work.

One common theme which came up in this research frequently is mindfulness, and though it does have a potential disadvantage of self-control-depletion, it has many more advantages in emotional control, reducing retaliatory responses, building teamwork, potentially reducing injury, and overcoming debilitating emotions among other benefits. Though most studies which researched mindfulness incorporated professional clinicians to offer the intervention, the practices show positive results despite the limited resources of the Navy and would be beneficial in improving toward the Sailor 2025 initiative. Applying mindfulness techniques through professional intervention at early stages of sailors’ careers such as during training stages can help promote healthy practices that they can take into the fleet to help keep work and personal life separate. Mindfulness can improve sleep quality and quantity (Liu et al., 2020; Hulsheger et al., 2014), and aid in controlling their

emotions so as to build interpersonal relationships, and ultimately better functioning teams (Wagstaff et al., 2012).

The E-OSC stress continuum provides input of the status of one's perception of their well-being, but it offers no means of dealing with that status nor provides an explanation of the source. Assessing factors such as team dynamics, current coping mechanisms, burnout, boundary intrusion rates, sleep quality or quantity would be more beneficial measurements. Though it would add to the number of surveys distributed by a command, it has been shown that surveys are in fact the most effective means of gaining insight on resilience of employees (Lester et al., 2018). Recognizing coping mechanisms through effective and involved leadership along with providing means of improving healthy coping mechanisms by that leadership could pay dividends in mental health and well-being based on the research in this thesis.

B. PROPOSITIONS

Effectively comparing current techniques used by sailors to what is available in the research is still a work-in-progress. In the process of this research, a study has been designed to acquire more information from sailors regarding their current resources, what resources sailors are aware of, and what actions N17 can take to mitigate the difference between proven stress management techniques and what the Navy currently offers sailors. The first step is to survey sailors at both shore-based and sea commands to gain an understanding of what sailors feel are the biggest stressors, their current knowledge of available resources, and what coping mechanisms or stress management tools they currently use given their knowledge of the resources available. This project could be accomplished by visiting sea and shore commands, interviewing both leadership and lower ranking sailors to gain an understanding, and composing themes and common ideas sailors discuss during the interviews to discover the gap in current practices and proven techniques.

Once the first step is accomplished, we can compare proven techniques discussed in this thesis to currently available resources and begin to propose strategies to implement among sailors to narrow said gap. It is understood that improvements in health and well-

being of sailors results in improvements for the Navy because sailors are happier (or have improved subjective well-being). With happier sailors comes more productivity (Heintzelman et al., 2020), and more productivity brings a stronger force to sustain national defense. Using the collected surveys and interviews will be a strong metric to understand the gaps and necessary actions to provide for the well-being of current sailors and how to move forward instilling a stronger total force fitness.

The researcher determined three testable hypotheses to be considered for future studies that I wish to make which are geared toward sailors' benefits. These are directed toward how studies can aim to fulfill their research questions and how it can be used moving forward with other related studies. To do so, these hypotheses are based on quick impact on sailors, how the Navy can benefit from their investment into new techniques for mental health, and the importance of fleetwide readiness.

- (1) Hypothesis 1: There will be value added across the fleet – Implementing mindfulness practices into sailors' daily activities would improve productivity of the unit, cohesion of the team, and effectiveness of the leader.

Sailors can be viewed from three different perspectives, 1) an individual basis, 2) a leadership basis, and 3) a team basis. These perspectives must be maintained and appreciated to best apply behavioral stress management techniques moving forward. The individual must be considered because that level of perspective is what determines which programs to implement based on the need of the sailors. Once a need is recognized, specific practices can be applied to meet the biggest needs along with which techniques would be most valued or acceptable. This thesis uses mostly civilian-based studies to better understand proven techniques and explore which methods are accepted by the general population. Beyond the individual is the team perspective which helps to appreciate how the group affects the individual. Not all stressors originate from the individual; since the Navy is team-based and relies on teamwork, it is important to understand how some techniques can be applied to a whole group and which group dynamics are creating stressors. Teamwork, group dynamics, and ultimately, increased productivity can benefit from understanding stress management techniques specific for groups. Finally, every

military member is taught from day one the importance of becoming a leader initially through followership, becoming a leader of oneself, and ultimately of a group of other people. With leadership comes unique stressors which must be considered and these stressors do not impact the leader alone as the leader's role inherently impacts their followers. Better understanding stress management techniques specific to leaders/ leadership roles will improve leaders, teams, and individuals.

- (2) Hypothesis 2: My Navy HR will gain a return on investment (ROI) – Many practices of stress management would be positively accepted by Navy Personnel

A major purpose of this thesis is to determine techniques that can be adapted for and effectively used by sailors in a military environment. Though many environments in which stressors must be overcome were considered for this study, an equally varied number of environments exists in the military which must be considered from a stress management perspective. It is important to appreciate the population that was studied in the civilian sector, and to which techniques each sample type was most receptive. One very important factor though is understanding the source of the stressor; once the source is understood, it will likely be simpler to apply the proper techniques which have been proven through research on civilians. From the studies that show acceptability and proven practices to similar communities, MyNavyHR and 21st Century Sailor can gain a return on investment from being able to quickly apply research which is already proven and can be quickly implemented.

- (3) Hypothesis 3: Early implementation could show positive results in TFF – the sooner these techniques are implemented, the sooner results can occur, and techniques can have impact fleetwide.

As outlined later in the analysis, though many studies' results are generally shown to be short-term, they are impactful, widely accepted, and practiced long after completion of the initial studies. Many of the studies which followed up on subjects' performance post study indicated subjects desired to continue to use learned practices due to positive acceptance of them. Practices can continue to be used throughout a sailor's career without a significant burden on their schedule with tactics that can be used during stressful

moments like self-compassion, breathing and meditation, or mindfulness. Additionally, given that most studies included in this thesis were conducted within a short time window, many of the techniques could be quickly applied with resources already in place and can have an impact on the fleet within a very short time span. Some studies incorporate methods which require trained professionals, and these studies should be used to justify the importance of having those resources readily available to sailors if they are not already.

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VI. CONCLUSION AND RECOMMENDATIONS

The U.S. Navy is making a concerted effort to enhance the mental health and wellbeing of its service members by pursuing two different campaigns under two different commands. WT is a program being implemented currently in NETC while E-OSC is focused on recovery and prevention under the 21st Century Sailor Initiative. Additionally, higher-level instruction starting with DOD Instruction 6400.09, as well as CJCS 3405.01, and finally NETCINST 1700.2 and NAVADMIN 222/19 all show the relevance of mental health by higher leadership and instruct on implementation of the discussed programs. These instructions unfortunately do not offer specific stress management techniques that are either proven to work or can be easily employed by sailors. The purpose of this thesis is to provide the Office of the 21st Century Sailor with insight on peer-reviewed stress management techniques which could be implemented by active duty sailors, and to gain perspective on the resources available to sailors, as well as which resources they are using.

In pursuing this thesis, the following research questions were used as a guide: (1) What are effective stress-optimization and recovery techniques that can be adapted to Total Sailor Fitness? (2) What combination of behavioral techniques are most likely to be effective in building stress tolerance and managing acute stress response in sailors? (3) How do these behavioral techniques compare to the techniques sailors are currently using? Two different methods were used to the answers to these questions. The first method was a meta narrative analysis which consisted of searching through highly rated journals for peer-reviewed research which studied stress management techniques that could be used by the Navy. The second method was an exploratory questionnaire which was used to gain pilot data on stress management measures used by sailors and what they are aware of at their current command.

There are three top level findings from this thesis. The first answers the first research question and found that the practice of Mindfulness was the most studied stress management strategy in the literature reviewed for the thesis. The second strategy most studied was Program Intervention where specific programs were implemented among a group of people. This second finding alludes to answering the second research question

and indicates that many of the stress management techniques required a professional -- such as a psychologist -- to guide the intervention. However, most interventions were highly accepted by the subjects in each study. Though most of the studies included in this paper were based on interventions done on civilians, based on the inclusion criteria, most of the techniques should be able to be used and accepted by military members. Finally, the questionnaire revealed that though many sailors had knowledge of various stress management measures spanning across multiple TFF domains, there was limited usage of techniques available at the command. Most sailors reported 22 hours or less per month of doing stress management measures either at home or at work. significant improvements can be made to the questionnaire to get more accurate insight from sailors.

One potential limitation is no direct feedback from sailors, via interviews, to gain insight into currently available resources and their understanding of or typical use of said resources. However, this thesis is an exploratory study, to set the parameters for an assessment plan for programs under Sailor 2025.

Based on these findings, the way forward is through further investigations and piloting programs in select commands based on findings from peer-reviewed literature and feedback from sailors. Initially, more questionnaires should be distributed to other commands, both shore and sea based, to incorporate a more wholistic perspective of sailors' stress management techniques and awareness of resources available. Once a sufficient number of questionnaires are completed and collected, a list of techniques should be proposed based on feedback from sailors, peer reviewed literature, and with the intent to include more TFF domains into the sailors' lives. Investigations moving forward should include assessment studies to test the efficacy of the stress management techniques proposed. One hypothesis of the results of the follow-on studies is that Navy leaders will become more aware of stress management resources that are missing from sailors' access that could help improve their overall health and well-being. Another hypothesis that may come from this research is that an improved communication campaign will be able to target sailors and inform them on which resources are already available to them. The final hypothesis is that Navy organizations could be able to reach out to various commands to employ different measures based on sailor input and literature, then study those outcomes.

APPENDIX. QUESTIONNAIRE



Naval Postgraduate School

Date: _____

Participant ID: _____

Study Questionnaire

Instructions: Please answer ALL questions as accurately as possible. Your responses are anonymous. You are only identified by the Participant numerical alias (ID).

1. What is your age? _____ years
2. What is your sex? _____
3. What is your rate: (for example, FC, HT, OS, IT, GSE) _____
4. What is your rank: (for example, E4, O2) _____
5. What is your department (if applicable)? _____
6. Years on active duty? _____

7. Please check any measures you use to relax, decompress, and manage stress. Check **all** that apply:

- aerobic exercise
- stretching, non-aerobic exercise
- drinking coffee, caffeinated drinks
- smoking
- snacking to relive stress
- regular, healthy eating
- sleeping well, about 7 to 9 hours a day
- structured relaxation techniques
- deep breathing
- meditation
- positive self-talk
- positive thinking
- personal goal setting
- mental visualization to focus on tasks
- personal counseling
- engaging in hobbies
- engaging in spiritual activities
- in-person social support group(s)
- on-line community, social media
- spending time with family
- spending social time with coworkers
- connecting with a mentor
- aspirin
- prescription medication
- family counseling
- alcohol
- humor
- financial counseling
- take on extra work
- embrace stress (use as a positive motivator)
- use noise canceling devices/technology
- play video games
- financial emergency planning

8. Please indicate the 3 measures you use most **frequently** to relax, decompress, and manage stress (**Enter 1, 2, 3**)

- aerobic exercise
- stretching, non-aerobic exercise
- drinking coffee, caffeinated drinks
- smoking
- snacking to relive stress
- regular, healthy eating
- sleeping well, about 7 to 9 hours a day
- structured relaxation techniques
- deep breathing
- meditation
- positive self-talk
- positive thinking
- personal goal setting
- mental visualization to focus on tasks
- personal counseling
- engaging in hobbies
- engaging in spiritual activities
- in-person social support group(s)
- on-line community, social media
- spending time with family
- spending social time with coworkers
- connecting with mentor
- aspirin
- prescription medication
- family counseling
- alcohol
- humor
- financial counseling
- take on extra work
- embrace stress (use as a positive motivator)
- use noise canceling devices/technology
- play video games
- financial emergency planning

9. Please indicate the 3 measures you find most **effective** to relax, decompress, and manage stress (**Enter 1, 2, 3**)

- aerobic exercise
- stretching, non-aerobic exercise
- drinking coffee, caffeinated drinks
- smoking
- snacking to relive stress
- regular, healthy eating
- sleeping well, about 7 to 9 hours a day
- structured relaxation techniques
- deep breathing
- meditation
- positive self-talk
- positive thinking
- personal goal setting
- mental visualization to focus on tasks

- personal counseling
- engaging in hobbies
- engaging in spiritual activities
- in-person social support group(s)
- on-line community, social media
- spending time with family
- spending social time with coworkers
- connecting with mentor
- aspirin
- prescription medication
- family counseling
- alcohol
- humor
- financial counseling
- take on extra work
- embrace stress (use as a positive motivator)
- use noise canceling devices/technology
- play video games
- financial emergency planning

10. What other techniques do you use to relax, decompress, and manage stress? Please do not include in your answer personally identifying information, such as name.

11. What stress management support tools or programs are available at your location? List all that you can recall. Please do not include in your answer personally identifying information, such as name.

12. Which stress management support tools or programs available at your location do you use most frequently? Please do not include in your answer personally identifying information, such as name.

13. Consider your answer for Question 8, where you selected the 3 measure you use most frequently to relax, decompress, and manage stress.

a. During the last month, how many total hours did you spend on the 3 measure you use most frequently to manage stress at home?

_____ hours

b. During the last month, how many total hours did you spend on the 3 measure you use most frequently to manage stress at work?

_____ hours

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