AN EXPLORATION INTO THE EFFECTIVENESS OF YOGA IN REDUCING ANXIETY IN FEMALE MILITARY PERSONNEL

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A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

Doctor of Education

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Abstract

Research indicates that female service members remain more anxious than their male counterparts, as these women report facing additional familial and occupational stressors. However, despite this evident incongruence, women in the military also remain less likely to seek mental health treatment for chronic anxiety. Current research indicates that yoga could serve as an efficacious alternative treatment to reduce anxiety, as study conclusions hint at elevated benefit and minimal risk when compared to counseling session attendance. A review of existing research presents several positive features and positive effects of yoga that lead to decreases in anxious mood. However, there is a need for further research to address existing gaps in the literature and, therefore, empirically prove yoga's ability to reduce anxiety among an anxiously vulnerable and prone population.

Keywords: yoga, anxiety, anxiety reduction, alternative treatment, women's mental health, military mental health, military

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Dedication

I dedicate this dissertation to my daughter, Goldie, the greatest gift and blessing in my life, and most beloved friends, Laura, Lexi, Shayna, Kelsey, and Tamara. I humbly thank you all for your constant encouragement and unending support. Without each one of you, I would never have been able to reach this achievement and mark this momentous occasion in my life. It is wholly due to your collective love, advice giving, listening, laughter, and shoulders to cry on that I am able to stand here today, on the cusp of graduation and doctorhood. My gratitude for your friendships knows no bounds and stretches beyond words. To Laura, Thirteenth!

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List of Abbreviations

Adverse Childhood Experience (ACE)

Anxiety and Depression Association of America (ADAA)

Cognitive Behavioral therapy (CBT)

Depression Anxiety Stress Scale-21 (DAS-21)

Generalized Anxiety Disorder (GAD)

Generalized Anxiety Disorder Scale (GAD-7)

Hypothalamic Pituitary Adrenal (HPA)

Institutional Review Board (IRB)

Military and Family Life Counselors (MFLC)

Mindfulness-Based Cognitive Therapy (MBCT)

Mindful-Based Interventions (MBI)

Mindfulness-Based Stress Reduction (MBSR)

Multivariate Analysis of Variance (MANOVA)

Parkinson's Disease Sensory Attention Focused Exercise (PD-SAFEx)

Perceived Stress Scale (PSS)

Penn State Worry Questionnaire (PSWQ)

Posttraumatic Stress Disorder (PTSD)

United States (U.S.)

Warwick-Edinburgh Mental Well-being Scale (WEMWBS)

Chapter One: Introduction

Overview

This study was designed to test whether Vinyasa yoga practice is a more effective means of reducing anxiety among female military members when compared to other types of gym-based physical exercise. Currently, the military faces ongoing challenges with retaining female military members, with one specific challenge resting in the fact that women are frequently separating from service due to self-reported decreased mental health as a result of daily stressors not related to combat (Bray, 2001). However, despite increasing levels of stress and subsequent anxiety among female servicemembers, there also exists a lack of willingness to seek help for such issues at mental health facilities, particularly at on-base clinics, owing primarily to perpetuated stigmas and personal fears, necessitating the implementation of alternative treatment measures (Elnitsky et al., 2013).

Background

Historical Concepts

Historically, mental health research regarding anxiety in the military has focused solely on posttraumatic stress disorder (PTSD) caused by either combat exposure or sexual assault (Crocq & Crocq, 2000). This past research emphasis holds a measure of connection to this particular study in that PTSD is technically classified under the larger umbrella of anxiety disorders, with one of the main causes for PTSD development stemming from the persistence of significantly high, unresolved levels of anxiety (Zoellner et al., 2011). However, in the past, experts in the medical and mental health fields have not always seen the anxiety-based classification of PTSD as obvious or self-evident. In fact, throughout America's wartime involvement, clinicians have historically struggled to both understand and define PTSD, as psychological professionals referred to the disorder as soldier's heart throughout the Revolutionary and Civil Wars, shell shock during the height of World War I,

and war neurosis during World War II (Crocq & Crocq, 2000). According to Crocq and Crocq (2000), the terminological coining of and focus on PTSD sprang from forced necessity, as doctors attempted to understand the disorder more fully in order to evaluate and treat the record-breaking number of mental concerns manifesting among military members returning from the Vietnam War. Therefore, in 1980, in connection with this war's end, the American Psychiatric Association successively added the criteria and coding for PTSD in the then-current edition of the Diagnostic and Statistical Manual of Mental Disorders to assist with diagnosis and treatment (Crocq & Crocq, 2000).

However, although the term PTSD remains relatively new, the experience is as old as the art of war itself. Per Crocq and Crocq (2000), records of ancient wars have always been accompanied by corresponding tales of negative mental and emotional outcomes deriving from trauma exposure, wherein war-initiated mental issues have traditionally rivaled physical injuries in both quantity and severity in the aftermath of battle. In the modern age, although the conduction of war has varied significantly over the centuries, similar psychological challenges persist with contemporary combat exposure. In response to these continued challenges, PTSD specific studies have increased within the past two decades as the wars in Iraq and Afghanistan have increased combat exposure for American service members (Lineberry & O'Connor, 2012). Interestingly, however, even though the United States has now entirely pulled out of all Middle Eastern-based conflict and is no longer actively engaged in foreign warfare, instances of psychological dysfunction and suicide among enlisted and officer ranks continue to rise (United States Department of Veterans Affairs, 2022). These statistics indicate that research fixated on the traditional exploration into PTSD, which has been the focus of military mental health studies, remains insufficient, as these studies overlook anxiety not related to combat as one of the largest, most invasive modern challenges for women in the military. Moreover, anxiety also appears among newly enlisted and

commissioned service members who have neither deployed nor engaged in physical or drone warfare more often and more severely than in the general public (Lineberry & O'Connor, 2012). Additionally, despite the upsurge in available mental health assistance and programs currently offered within the military, members remain resistant to such participation, with this untreated pathology increasing the quantity of presenting mental health issues within the military annually (Bandoli et al., 2017).

Thus, in recent years, anxiety among military members manifests less from combat exposure and more from general occupational stress (Russell et al., 2022). Per Bray et al. (2001), the determining factor that regulates the impact of undeniably unique military stressors lies in an individual's ability to cope, wherein a lack of developed coping strategies then causes stress to rise from manageable discomfort to uncontrolled anxiety. Since the military inherently has more stressors of a greater intensity than are present in equivalent civilian professions, without pre-established coping methods, stress often develops into anxiety, which, if left untreated, morphs into diagnosable disorders (Bray et al., 2001).

Currently, approximately 15% of modern servicemembers report experiencing anxiety symptoms that correspond to clinical diagnosable anxiety, wherein the most commonly occurring anxiety disorder existing among the ranks of the U.S. military is generalized anxiety disorder, or GAD, followed by panic and obsessive-compulsive disorders (Russell et al., 2022). Yet, as previously described, the history of anxiety studied in the military has remained entrenched in one sole, isolated subcategory of anxious disorders, PTSD, excluding generalized anxiety from the narrative, despite its pervasiveness, which creates a cavernous gap within the existing research. Further limitations of such research arise from the fact that, all alluded to early, in previous military studies, the originators of PTSD most frequently examined consist of either sexual assault or combat exposure trauma, rather than exploring the effects of anxiety not related to PTSD (Keough & Schmidt, 2012). This currently

significant and prevalent type of anxiety, generalized anxiety in the military, should, therefore, be the focus of current research moving forward, due to its rapid growth among military members of both enlisted and commissioned ranks and its underexplored nature.

Effects of Anxiety in the Military

Untreated anxiety in military members, and in humanity in general, ultimately perpetuates, creating a negative ripple effect that impacts other individuals beyond the service members themselves. To begin, in the first ripple proceeding from the impact of military anxiety, when statistically compared to civilian family members, military spouses and children traditionally report significantly elevated anxious and depressed mood, relational turmoil, and insomnia due to inherent instability that stems from the military lifestyle, such as frequent moves, loss of social supports, and separation from one another (Lester et al., 2011; So et al., 2018). New findings additionally submit that these dependents remain more likely to experience mental disturbance when the family unit includes a military member undergoing psychological dysfunction, as the military member's poor mental health status augments overall disruption to familial systems and functioning (Hester, 2017). However, according to Park et al. (2011), though military dependents definitively face a greater number of mental health challenges and suffer more psychological distress than civilian spouses and/or children, most of the existing research on this subject fixates on the effects of deployment and reintegration, rather than the impact of routine stress stemming from daily life as military dependents.

Moreover, in the military, due to the lowered propensity towards legitimate help-seeking behaviors, rates of mental disorder comorbidity are significantly higher than in the civilian population. In particular, the research of Bray et al. (2001) found that unresolved anxiety among servicemembers produced accompanying depressed mood for women and addiction for men. One common key characteristic of disordered anxiety, depression, and

addiction lies in criterion of negatively affected functionality in one or more areas of lifestyle operation. According to Bray et al. (2001), military members appear more susceptible to experiencing impaired occupational performance as a result of mental disorders than their non-military affiliated equivalents. Due to the sensitive and high-risk nature of military jobs, eradicating harmful impacts to security and physical safety should be considered a top priority, which further necessitates military leadership's official endorsement and encouragement of any and all effective anxiety reduction techniques, including non-traditional methods. Thus, on a larger scale, the health of America's military members affects the overall safety and security of the nation as a whole. Speaking on security, the main role of the military lies in its ability to rapidly deploy to contain both manmade and natural disasters (Margiotta, 2020). Each member, therefore, needs to maintain physiological and psychological health as a requirement for deployment eligibility and, thus, overall suitability for continued service (Riddle et al., 2007). However, while researchers study this cascading, systemic anxiety at length, the initiator of the anxiety, i.e., daily, chronic, non-combat related anxiety among female military members, remains understudied. This leads to untreated anxious mood that ultimately degrades the health of the service member, the health of the service member's family, and the health of the entire military organization, leading to damages to individual psychological wellness and the effectiveness of militaristic endeavors alike.

Historically, in instances where women serving in the active components of the American military have been psychologically studied, case studies and research have focused on specific causes of increased anxiety, i.e., the exploration of various onset factors, such as pregnancy, postnatal mental health concerns, and sexual and physical abuse and/or violence, with a heavy emphasis on instances of rape and trauma exposure. For example, within the female enlisted ranks, polling has consistently reported increased anxiety and subsequent

psychosomatic illnesses due to anxiety directly connected to various forms and degrees of sexual assault, wherein over 40% of enlisted women disclosed residually negative mental health side effects following such attacks (Stein et al., 2004). Research also proved that this population experiences higher than average perinatal anxiety, postpartum depression, and clinically diagnosable exhaustion after delivery (Rychnovsky, 2007). Notably, according to Iobst et al. (2021), this decrease in mental health during pregnancy can be indisputably linked to the unique occupational pressures and cultural intensity of the military.

In much more recent history, studies have started to notice the presence of general anxiety stemming from non-traumatic events as well, wherein enlisted women are not the only females serving in the military affected by high levels of anxiety. Female leaders, or female commissioned officers, likewise detail personal challenges with elevated anxiety. Specifically, according to Rosellen, Manzi, and Bard (2021), a recent case study revealed that less than 20% of female military officers polled did not feel chronically anxious, wherein a vast majority, which is to say over 80% of participants, did therefore confirm noticeable and continuous anxious mood unrelated to combat stress. Moreover, per the research of Roche et al. (2020), over 60% of female officers polled described experiencing elevated anxiety connected to leader role responsibility. Interestingly, this study also revealed that a majority of these servicewomen reported intentionally withdrawing from their social supports and disconnecting from engagement with their family systems as a result of the anxiety (Roche et al., 2020). Yet, despite both the self-reported and independently discovered elevated anxiety levels within this population, the background of mental health studies focusing on women's issues lacks history. Even though research proves distinct mental health differences between male and female service members, wherein women's mental health can be consistently classified as lower, studying women's anxiety levels separately from their male counterparts has only recently taken place, making this subsect of research relatively new and

predominately unexplored, which in turn leaves gaping holes in the understanding of women's mental health challenges in the military (Cazares et al, 2021).

Problem Statement

Although psychologists have preliminarily explored the prospect of utilizing yoga as an alternative anxiety treatment, most studies that offer signs of potential benefit remain either exploratory or outdated, highlighting the necessity for additional case studies to verify the exact extending effects, both positive and negative, of yoga on generalized anxiety reduction (Mitchell et al., 2013). Furthermore, while clinicians have employed yoga to treat anxiety disorders among non-military members (i.e., the general public), minimal experimentation has been conducted regarding yoga practice and anxiety disorders for those who served in recent combat situations, including the operations conducted in Iraq and Afghanistan, regardless of whether the experienced anxiety can be classified as general or PTSD specific (Cushing et al., 2018). Additionally, while the military population remains an under-evaluated population in modern case studies, females in the military find themselves almost ignored in the research, with military studies routinely combining genders in participant groups, despite evident gender differences, such as relational support reliance and hormonal variances (Johnston et al., 2015). Research additionally revealed that, while each gender reported more elevated occupation pressure in their military positions than their civilian counterparts, servicewomen experience greater familial and work-related pressure, reporting 22% and 33% more distress than male military members in these areas, respectively (Bray, 2001). Thus, although the number of women in the military consistently increases and anxiety disproportionately and harmfully impacts women when compared to their male counterparts, this female subpopulation receives no specific focus in current research.

Furthermore, while exercise as a means to improve overall mental health has undergone significant research that verifies the efficacy of practice in the civilian world, yoga

remains a relatively newer, untested technique for treating service-based anxiety in every sector, both civilian and military (David et al., 2018). The varying components of yoga practice, including a sense of community, measured respiration, increased mindfulness, physical activity, and the subsequent release of uplifting hormones, have also not been evaluated as individual elements to see which the participants felt was most beneficial, presenting a current research gap and, thus, opening the door for future research regarding yoga and anxiety (Cramer et al., 2018). Moreover, initial research on yoga within military populations focuses primarily on the eradication of trauma-based PTSD, stemming from events such as combat exposure or sexual assault, rather than evaluating generalized anxiety (Cushing et al., 2018; Braun et al., 2021). However, since civilian case studies show potential benefits in reducing general anxiety through consistent yoga practice, the proposed research will extend these same principles to a specific subsection of military women that experiences increased levels of stress and anxiety (Smith et al., 2007). Therefore, the theoretical framework informing the study derives from two main modalities, which are mindfulness and exercise psychology.

When identifying the key challenge within this subject area, as mentioned, a gap exists between the current military mental health programs and the members' lack of use. Since military members exhibit a strong disinclination to visiting the available mental health resources or taking mood-altering medication, an alternative should be provided to manage this issue and prevent the levels of anxiety from either raising to a point of mental and emotional trauma or from causing devastating mistakes in one's occupational arena. In order to provide and promote the alternative treatment with the most efficacy, a comparison should be made to determine if exercise in general, such as running, weightlifting, and participating in other similar gym workouts, provides a maximized level of mental health benefit or to determine if yoga intrinsically possesses a higher ability to bolster to mental health than these

traditional workouts. Ultimately, by finding a successful alternative treatment to traditional talk therapy, the military will benefit from pinpointing a practice in which military members will be more likely to participate. Finally, due to the complete lack of women's focus in military research, with these studies continually integrating male and female components in their populations, current research cannot determine if the benefit would be increased with a certain gender. Alienating men from the population could show that yoga is more effective with women and, therefore, could provide more concrete and usable statistics to prove yoga's helpfulness in the mental health field when addressing women's needs specifically. Thus, the problem is that women in the military experience anxiety at a clinically more elevated rate when compared to their female civilian counterparts and the entirety of the male population, including men both in and out of the service, without the existence of usable treatments specifically aimed at helping women.

Purpose Statement

The purpose of this research investigated one primary element, as this experiment compared yoga's impact on military women's anxious levels to the anxiety levels of women who regularly participate in gym workouts, specifically evaluating overall anxiety symptoms and mental wellness, to ascertain if the use of yoga as an alternative therapy treatment can produce clinically significant improvements in mental health. As previously alluded to, the target population consisted exclusively of females on active-duty status, either commissioned officers or enlisted members who are serving within any branch of the U.S. military, including the Army, Navy, Marine Corps, Coast Guard, Air Force, and Space Force. Moreover, the study's dependent variables consisted of measuring anxiety, stress, worry, and mental wellbeing among this population. The independent variable for this study, therefore, is the type of exercise practiced by the participants, which was classified as either gym-based exercise, yoga, or a lack of a physical fitness routine.

Significance of Study

The practical significance of this study lies in the intrinsic need for anxiety reduction within the military, particularly among commissioned and enlisted servicewomen. In particular, not only do women in the military face more occupational and familial stress, but female service members also experience increases in instances of sexual assault and both pre- and post-natal anxiety when compared to their male counterparts and female civilian peers, respectively (Walsh et al., 2014; Weis et al., 2017). Physical acts of sexual assault should be mentioned in connection to generalized military anxiety since recent research revealed that these incidents directly correlate to increasingly experiencing mentally disordered traits and symptomology not connected to PTSD for female servicemembers (Adam et al., 2021). On a wider scale, confirming the positive psychological benefits of yoga on anxiety reduction would provide the federal government with empirical support to back the implementation of yoga into basic training as a preventative measure to counter anxiety. The prevention of mental disorders among military members will ultimately cost less, in terms of financial and mental expenditure, than treating deeply ingrained cognitive dysfunctions (Anderson & Insel, 2006). Similarly, because the military does contain more stress than the civilian sector, practicing yoga as a stress management skill before the stressors begin can build resilience via the amassing of mindful coping skills (Bray et al., 2001). Although the inherent stress of military enlistment cannot be entirely eliminated or eradicated due to the inherent nature of service in the armed forces, the use of healthy coping mechanisms designed to mitigate daily stress and pressure can instill mental strength in members and, therefore, build general psychological resiliency, making members less likely to develop chronic stress, which in turn would lead to a decreased likelihood of developing disordered levels of anxiety.

Research Questions

The primary research questions for this specific study are as follows:

1. Is there a significant difference in anxiety between active-duty military women that routinely practice yoga, military women who work out at a gym, and military women who do not routinely work out?
2. Is there a significant difference in stress levels between active-duty military women that routinely practice yoga, active-duty military women who work out at a gym, and active-duty military women who do not routinely work out?
3. Is there a significant difference in the amount of worry between active-duty military women that routinely practice yoga, active-duty military women who work out at a gym, and active-duty military women who do not routinely work out?
4. Is there a significant difference in well-being between participants that routinely practice yoga, participants that engage in gym/home gym-based workouts, and those who do not regularly work out?

Definitions

1. Active Duty - Active-duty military is full-time service within one of the six branches of the United States Military, which encompasses joining the military (both swearing in and signing a contract) for a specifically designated period of time, typically in increments of four to six years. During this time, the member reports to an assigned military base for daily work (Substance Abuse and Mental Health Services Administration, 2011).
2. Alternative treatment - In a psychological capacity, an alternative treatment can be defined as a method or approach to emotional and mental healing that does not fall under the umbrella of traditional medicinal, psychiatric, or therapeutic treatment, excluding, therefore, pharmaceutical adherence and therapy session attendance (Schulz & Hede, 2018).

3. Vinyasa Yoga - Vinyasa yoga is a type of exercise based on eastern spirituality focused on developing harmony and acceptance in life by combining movement and mental control to create an active meditation comprised of controlled breath work and body poses, which lies under the larger umbrella of Hatha yoga, (Woodyard, 2011). The primary characteristics differentiating Vinyasa yoga from other yoga types include a more rapid pace for transitioning from pose to pose and an emphasis on connecting breathwork with physical mobility (Tay & Baldwin, 2015).
4. Traditional talk therapy - Traditional talk therapy consists of in-person, telephonic, or electronic discussions between a client and a mental health professional, wherein the counselor gathers information on the client's background and present life, forms a diagnostic opinion on the client's current mental health condition and needs, and develops/executes a treatment plan to help the client achieve a state of increased mental wellness (Miner et al., 2019).

Summary

Researchers often overlook women in the military, even though empirical evidence suggests that this subpopulation remains increasingly vulnerable to anxiety and the development of anxiety disorders stemming from everyday life stressors (Bray, 2001). Moreover, although new psychological studies suggest potential benefits in utilizing yoga to reduce anxious mood, additional support must be conducted to verify the undeniability of the benefice. For example, per Cramer et al. (2018), although research has proven that yoga possesses the capability to reduce mild to moderate anxiety and daily stress, the currently existing data remains insufficient to affirmatively prove yoga's efficacy in eradicating clinically disordered anxiety, justifying the necessity for further research in this area of focus. Thus, research like this dissertation experiment can provide further insight by offering a comparative analysis of traditional types of physical endeavors, such as running,

weightlifting, cycling, and similar workouts, to newly emerging alternative treatment options, such as yoga practice (David et al., 2018).

Chapter Two: Literature Review

Overview

The research presented within this literature review will provide the justification for continuing to explore the use of Vinyasa yoga as a means to reduce chronic anxiety among female military members. Yoga as an alternative anxiety treatment challenges the current military standard of attempting to improve mental health by encouraging general gym-based exercise. At the outset, the review of the literature will identify existing gaps in the current research of anxiety studies. These gaps include the lack of focus on military populations in general within psychological case studies and the specific absence of all-female sample populations within existing military-based research. Next, the review will present the unique potential and empirically supported benefits of practicing yoga. The positive effects to be reviewed include the intrinsic features of yoga practice that provide a high level of benefice to individuals with anxiety, such as a minimal dropout rate, the development of coping mechanisms, the sense of community/fostering of social supports, and the inherent appeal to female participants. Finally, the review will conclude with a discussion on the positive effects of yoga on anxiety reduction, which consist of rapid healing, decreases in self-reported anxiety, and the diminishment of any co-morbidly occurring depression, offering additional insight into dependent influences.

Theoretical Framework

This research examining yoga as a viable alternative to traditional talk therapy holds its validity in several psychologically based theories. Most notably, the concept of this research, which analyzes yoga as a means to reduce anxiety, stems primarily from mindfulness and the science of exercise to increase psychological wellness. Yoga practice naturally combines mindfulness and physical movement, implying an increased effectiveness when compared to simply relying on one theory alone.

Mindfulness

To begin, with growing usage within the past century and recent evidence of success, the realm of modern psychotherapy increasingly incorporates mindfulness in both clinical research and session work (Keng et al., 2011). The concept of mindfulness originally derives from an Indian meditation, specifically the concept of focusing on the here-and-now to connect with present experiences (Selva, 2017). However, although the core of mindfulness theory originates from the combination of both Hindu and Buddhist practices, which have been in use for well over 2,000 years, the mental health community credits Dr. Jon Kabat-Zinn with actively incorporating mindfulness into modern therapy sessions starting as recently as 1979 (Majeeda et al., 2018). Kabat-Zinn merged traditional eastern spiritual practices with westernized psychology, creating a two-month counseling method called mindfulness-based stress reduction, or MBSR (Selva, 2017). MBSR then formed the basis for a mindfulness-based version of cognitive behavioral therapy (CBT), known as mindfulness-based cognitive therapy (MBCT), which modern therapists routinely use to treat depression and anxiety (Selva, 2017). Furthermore, per Shapero et al. (2018), like the ancient practice of its origin, clinicians describe mindfulness as the practice of developing an intentional awareness for the experiences in the here-and-now while simultaneously sitting with and accepting any subsequently arising emotions or external situations outside of one's personal control. Thus, strategies that focus on mindfulness, commonly referred to as mindful-based interventions, or MBIs, are increasingly integrated in sessions since researchers discovered the benefit of mindfulness on both physical and mental welfare, as mindfulness practices enhances focus, fact recollection, cognitive processing, and a general sense of calm (Shapiro & Weisbaum, 2020). Common mindfulness techniques used in therapy include meditation, deep breathing, grounding exercises, and yoga.

Exercise Psychology

Next, while seemingly more modern, the concept that exercise can improve a person's lifestyle and general sense of being dates back to ancient times as well, as Hippocrates prescribed physical movement to improve health, citing the medicinal benefits of taking walks (Stamatakis et al., 2018). When first exploring fitness, researchers fixated solely on examining the benefits on physiological health associated with working out, including decreased blood pressure and increased heart health and general wellness (Dishman & O'Connor, 2005). However, Carl Friedrich Koch expanded on this concept, identifying the effects of cardiovascular-based exercise on the mind in 1830 and creating the foundation for modern fitness-based alternative treatment plans (Biddle & Vergeer, 2019). Almost 100 years later, Coleman Griffith, who is credited as the American founder of exercise psychology, began studying the inverse of modern exercise psychology, exploring how an individual's mental status could impact athletic ability and seeking to identify similar mental and emotional strengths among those who played sports (Kornspan & Quartiroli, 2019). Researcher and psychologist William P. Morgan then became the first modern researcher to connect increases in physical movement to measurable decreases in depression during the 1960s (Dishman & O'Connor, 2005). Two decades later, the mental health community officially coined the phrase exercise psychology, formally defining the method as the intentional practice of working out to achieve mental and emotional wellness rather than physical accolades (Biddle & Vergeer, 2019).

Combined Framework

As previously mentioned, this particular research relies on the incorporation of both mindfulness and exercise psychology. According to recent research, exercise that elevates a heart's rate well above resting standards can serve as an effective alternative treatment for anxiety (Aylett et al., 2018). Further studies that specifically evaluated the exercise

component of yoga on anxiety revealed these same reported decreases for civilian populations, as the work of Simon et al. (2020) verified that practicing yoga can reduce anxiety for those who are either resistant to or don't have access to traditional anxiety treatment, such as therapy and/or medication. Thus, this research relates to the aforementioned theories by incorporating both of these methods to test efficacy. The presumption for this research rests on the idea that if each of these theories decreases anxiety, the combination of the two theoretical methods through yoga, which consists of mindful exercise, will produce significantly improved mental health by lessening anxiety, stress, and worry while simultaneously bolstering overall psychological well-being. The research also expands on this foundation by investigating if vulnerable populations with traditionally higher than average stress and anxiety rates need the combination of theories to more effectively reduce anxiety.

Related Literature

According to Cramer et al. (2018), although existing studies remain preliminary and inconclusive, research hints that yoga may provide an alternative treatment for anxiety resolution that boasts an efficacy level equal to or greater than traditional talk therapy, particularly for women with chronic stress, such as female service members. Additionally, further research efforts should seek to address existing gaps within current studies regarding yoga's effectiveness on reducing anxiety for female military members, several of which exist. Although researchers have begun using yoga with moderate success to reduce posttraumatic stress disorder symptomology in studies with civilian participants, minimal research has been conducted to evaluate yoga's effect on the chronic yet non-disordered stress of modern military members (Cushing et al., 2018). However, while the military population remains an under-evaluated population in modern research in general, females in the military find themselves almost ignored in the research, with military studies routinely combining genders,

despite evident differences between the two that impact coping and mental wellness, such as relational support reliance and hormonal variances (Cushing et al., 2018). Research also revealed that, while each gender reported more elevated occupation pressure in military positions than their civilian counterparts, servicewomen experience greater familial and work-related pressure, reporting more distress than male members, and remaining more likely to develop chronic stress and/or anxiety (Boyd et al., 2013; Cohen et al., 2016). Yet, despite experiencing increased anxiety levels, women in the military remain less likely to seek traditional treatment for mental health concerns than their male counterparts (Elnitsky et al., 2013). According to the research of Elnitsky et al. (2013), pervasive military stigmas regarding mental health, such as a fear of appearing mentally, emotionally, and professionally (i.e., missing work hours to receive treatment services) weak, prohibit help-seeking behaviors within this population. Thus, a focus on military females presents more concrete information on the effects of yoga for two underrepresented sample populations, military members and women.

Further exploration of yoga as a viable alternative treatment for female service members with anxiety must be conducted to empirically prove the validity of the method, due to the prevalence of anxiety, both worldwide and, specifically, within the military. Specifically, according to recent statistics, female military personnel consistently self-report and/or are diagnosed with anxiety disorders, including generalized anxiety disorders, panic disorders, and PTSD, more frequently than their male co-workers (Mota et al., 2012). This literature review will highlight the current mental health issues of military service members and offer existing support for using yoga as a viable mental health treatment option.

Mental Health in the Military

When analyzing civilians, according to Crowe et al. (2016), 20% of the population annually meets the criteria for a mental issue. Conversely, Kessler et al. (2014) found that

25% of full-time American military members could be clinically diagnosed with some type of psychological concern during a typical 12-month span on usual duty, which is to say, non-deployed status. However, acknowledging and treating mental health issues, or aspects of wellness that cannot be physically observed like a somatic war injury can be, has only recently gained full support in the service (Russell et al., 2018). Thus, the Armed Forces were recently forced to redesign the long-enduring focus of the military's core messaging and goals, meaning that military members can ethically no longer be seen as or treated as tireless machinery, as was done in the past, requiring leadership to support various mental health outlets (Russell et al., 2018). Experts determined that operating in environments like the military that contain daily, repetitive stress can cause mental disorders to develop, particularly anxiety disorders, even without exposure to combat (Lin et al., 2015). The research of Hurst et al. (2018) also supports this claim, as results proved that military members' continual exposure to stress and distress can lead to anxiety disorders without the presence of a traumatic event, leading to poor responsiveness to medicinal treatment and necessitating reliable, non-harmful alternatives to such treatment. Ongoing comparative research conducted by the Deployment Health Clinical Center (2017) revealed that anxiety disorders have steadily risen, more than doubling in occurrences from two to five percent, among enlisted military members of all gender between 2005 to 2016. In fact, during 2015 alone, within the division of the Army, the largest branch of the U.S. military, over seven percent of the general population serving on active duty met all pertinent and necessary criteria to be clinically diagnosed with an anxiety disorder, surpassing its other sister services with these statistics (Deployment Health Clinical Center, 2017). These evaluated servicemen and women also displayed more hyperactivity symptoms than civilian participants, as the military members were more likely to report an inability to relax and increased difficulty with temper control and angry mood change management (Deployment Health Clinical Center,

2017). Moreover, an analysis of Canadian military populations proved a higher rate of general anxiety to the point of disorder than the populace's civilian counterparts, with specific anxiety among the military members centering on occupational pressure, the potential for physical harm due to inherent career risks, work-homelife imbalance, and continued distance from primary relational supports (Katzman et al., 2014). Arguably, however, the most notable component of this study revolves around the ability to healthily function, as self-reported anxious military participants evidenced significantly decreased daily operating capabilities, particularly when off duty (Deployment Health Clinical Center, 2017). One criticism of this study lies in its use of a foreign population, for, although mental health concerns within the Canadian Air Force equivalently mirrored American reported armed forces' mental and emotional wellness statistics, cultural differences cause variance in core mentalities. Therefore, methodologies for governing military bodies must be considered and, at best, this research should only serve as the theoretical groundwork for justifying similarly based future studies in the United States, as this study highlights a common, generalized problem for a significant number of military members as a whole, regardless of nationality or country association.

Additionally, Hoopsick et al. (2018) conducted an exploratory experiment to observe the average levels of psychological wellness among military members in general, which revealed poor mental and emotional health in those who have never deployed and, therefore, have never experienced combat exposure. In fact, even during part-time service, research hints at increased anxiety and depression for military members due to high stress coupled with military engagement (Hoopsick et al., 2018). This increased stress places subsequent strain on military marriages, which, when tension in these committed romantic relationships occurs, negatively influences social support coping strategies against anxiety, creating a potential propensity towards disordered anxious mood (Hoopsick et al., 2018). However, as

researchers conducted this study using a mixed population consisting of Guard and Reserve members, which is to say, those not enlisted in active service, additional inquiries should evaluate active-duty populations as well to determine if equivalent effects and service-based anxiety causation exist among both groups. Conversely, new studies affirmed the concept that deployments to active combat zones do not exclusively cause mental disorders for servicemembers. Recent research found clinically significant numbers of diagnosable psychological symptomology expressions in those who have never deployed, including overseas mission involvement to non-hostile areas, and in those who, additionally, are not slated for deployment, bypassing the additional stress of pre-deployment preparation, (Crum-Cianflone et al., 2016). Yet, non-deployed service members are still experiencing increased levels of anxiety, indicating that military life and the unique stressors thereof are contributing to the disproportionate amount of anxiety in military populations. Thus, anxiety reduction for all troops should remain a top health priority for the military as a whole.

Potential Causes of Anxiety among Military Members

Crum-Cianflone et al. (2016) also highlighted a common gap in the existing literature concerning military mental health, stating that related research focuses almost exclusively on forward deployers, or those deploying to foreign countries, and combat participants, often overlooking the potential for consistent daily life stress to initiate anxiety disorders and non-disordered, chronic anxious mood stemming connected with military service. Armour et al. (2017) agrees with this evaluation, adding that the negative shared emotional responses and/or thought patterns associated with the development of widely evidenced anxiety among a multitude of military members suggest similar initiating reasoning, such as occupational pressure, as the cause of high daily distress. Yet, often, even when treatment for such anxiety does occur for servicemen and women, leadership and base mental health providers primarily fixate on alleviating apparently noticeable symptom expression rather than addressing the

core source of anxious mood that can derive from both the military lifestyle and underlying mental conditions previously existing before enlistment (Armour et al., 2017). Per Blosnich et al. (2014), the high propensity for mental disorders, including anxiety, within the American enlisted forces, particularly among younger enlisted members, could partially be due to adverse childhood experience (ACE) trauma sustained by service members, which encourages service enlistment to remove themselves from various abuses, neglect, and poverty within their childhood homes. Thus, a combination consisting of exposure to unresolved past traumas and a general lack of foundational coping skill formation can exacerbate anxious mood following enlistment due to immersion in daily stress and, therefore, chronic distress for a large subset of the population. This research presents insight into a trifecta of potential influences to explain the profoundly and pervasively decreased psychological welfare among military members, highlighting the possibility of poor mental health within this population due to pre-enlistment mental taxation, propensities towards mental disorder, and elevated daily stress once formerly enlisted into the service. While the study conducted by Blosnich et al. (2014) explains possible contributing factors leading to increased anxiety among enlisted military members, the population consisted entirely of male participants, necessitating further investigation to observe the causation of poor mental health for military females to effectively treat the causal circumstances degrading psychological wellness.

Additionally, per Fink et al. (2016), the rate of mental health issues, including the existence of both general distress and diagnosable disorders, has been experiencing a distinctly upward trend, with elevated rates of anxious and depressed mood both with and without recent deployments. In fact, recent research showed that while military members who deployed within the past 12 months evidenced elevated anxious mood at an amplified rate of 29%, study participating service members who did not deploy within the past 12 months

manifested a 32% elevation in anxious mood (Fink et al., 2016). Thus, sufficient primary research exists to prove a correlation between everyday military lifestyle bearing more impact on military members' mental health than routine deployment, particularly for deployments wherein the members do not face combat or active warfare.

Furthermore, exposure to war does not necessarily serve as the main reason for anxiety among military ranks, which remains important as combat-instigated PTSD exists as the primary point of focus for the vast majority of yoga and anxiety studies within military populations. Yet, according to Resnick et al. (2012), while women face combat situations far less frequently than their male counterpoints, military females inversely experience more anxiety disorder diagnoses, specifically PTSD, which typically stems from high-risk levels of sexual aggression towards these particular members. Moreover, another current challenge creating significant research gaps in this arena lies in the lack of knowledge of mental health concerns and issues previously existing before enlistment or commissioning in the military. Thus, the onset factor producing the cause-and-effect cycle of anxiety among female military members remains unknown. Whether individuals with mental distress having a tendency to join the military causes additional increases in anxiety or an inability to cope with elevated stress or whether the sole component of the intrinsically stressful military lifestyle alone increases anxiety has not been studied at length, certainly not to any extent to prove causation validity. This confusion become perpetuated due to the scarcity of women-only populations within military studies, as other components contributing to poor mental functioning for female service members have not been studied at length, despite the fact that women and men in the military face varying degrees and/or types of unwanted sexual advances, anxiety disorders, and effective coping mechanisms.

Anxiety Treatment

Next, regarding psychological treatment in the military, for active service members and veterans who have experienced and/or report trauma or increased daily stress and did attempt to seek traditional treatment to resolve current issues, most are met with lengthy wait times when trying to schedule an appointment at a facility officially approved by the military's healthcare system (Hester, 2017). During this waiting interim, few alternative options for mental health relief are being offered and promoted by military bases, which often causes chronic anxiety to reach the level of a diagnosable disorder and then allows the unresolved, untreated disorder to frequently progress to suicidal ideation, attempts, and completion (Hester, 2017). Furthermore, while the research revealed that over 30% of an Army-based sample population warranted a need for therapy to address existing psychological issues, only 21% of that population segment felt comfortable engaging with a therapist/counselor (Kim et al., 2016). Thus, while five percent of this study's service member participants, who were clinically diagnosed with a mental disorder, preferred to seek out alternative methods to therapy to treat classified dysfunction on their own, over six percent decided to forego any treatment at all, due to an unwillingness to attend counseling sessions and a lack of provided information regarding available alternative treatments (Kim et al., 2016). Statistics obtained from another recently conducted study likewise found a significant under-use of existing alternative psychological treatments, as few officially supported alternatives exist and even fewer remain actively promoted by service leaders (Hom et al., 2017).

Mental Health Stigmas Existing Within the Military

Additionally, although commanders and military decision makers have started to initiate stigma-reducing efforts surrounding mental health in recent years, survey statistics revealed that these countermeasures remain inefficient, as the stigma mentality has already

been continually perpetuated and deeply ingrained in the military majority for decades, especially within the enlisted populace, where distrust of leadership remains vastly prevalent and undeniably evident (Hom et al., 2017). Yet, in critique of this research, as males comprised 79% of the study's sample population, no accurate gender-specific patterns can be deduced from such an exclusionary sample that reported conclusions based on feedback biased towards the male experience (Kim et al., 2016). This issue remains a consistently repeated theme in research conducted using a population limited to service members, as one fundamental weakness found in the vast majority of military studies rests in the propensity to disproportionally represent the male gender in the sample populations, a trend seen repeatedly enough to constitute the overarching norm in military mental health evaluations. The argument could be reasonably made that such studies follow the natural distribution of genders inherently occurring within the military, wherein males clearly dominate as the majority. However, since women remain more likely to attempt alternative treatments, the true effectiveness of these alternative methods for women could become buried and/or skewed under predominately male reactions and thought processes, which incline towards either traditional therapy methods or help-seeking avoidance (Alwhaibi & Sambamoorthi, 2016).

To understand internal resistance towards therapy during times of distress or anxious mood, researchers must evaluate existing stigmas in two areas, both of which will be discussed in the following paragraphs. Specifically, stigmas related to mental health in the majority population must be understood in conjunction with stigmas found within particular subsets of the populace, such as the military, in order to reach a comprehensive overview of treatment avoidance influences. To begin, stigmas related to general mental health issues, diagnosable disorders, medication adherence, and treatment attendance remain prevalent in society at large, as well as in the subset of military populations. Per Mannarini and Rossi

(2019), stigmas against psychological issues largely exist because of the fear stemming from disorder misunderstanding, as those without current and/or ongoing mental health concerns perceive those in treatment as being a potential physical threat, possessing uncontrollable emotions which make those with mental health issues unable to manage personal actions, and, consequently, likely capable of sporadic aggression. Due to these mentalities, research revealed that individuals facing mental health concerns additionally face distrust manifesting discrimination, particularly within the workplace, as the possibility of information sharing to employers, particularly in cases of governmental or federal employment, concerns distressed workers, who actively avoid therapy to protect their livelihood regardless of whether a threat of termination actually exists or not (Mannarini & Rossi, 2019). On a social level, although those expressing varying degrees of distress or disorder tend to self-isolate or feel alone, concerns over losing friendships and, thus, experiencing even more increased solitude motivates a resistance to holding conversations about mental health as well. Therefore, a person affected with negative psychological symptomology, eager to avoid possible intolerance or bias, will frequently resist openly discussing emotional and mental concerns, creating a barrier to the widespread normalization of psychological distresses (Mannarini & Rossi, 2019). To further avoid possible judgement, Mannarini and Rossi (2019) also submit that many people choose to forego attending counseling sessions or participating in other related treatment types to contain the presence of an issue, as society's encouragement for therapy, although substantially increased in the past decade, remains lacking. Feeling that the immediate community will not understand the reasoning for counseling attendance and hesitating over the pricing for such treatment, particularly in private practices that do not accept insurance, can be a supplementary deterrent for seeking psychological help (Mannarini & Rossi, 2019).

Overcoming these stigmas, which currently persist throughout the totality of global society, continues to challenge smaller subpopulations, especially those that hold to personas characterized by traditional core value beliefs, such as religious groups, certain cultures, and, as will be discussed in the following section, the military (Choi et al., 2019; Crowe et al., 2016). To begin, the research of Currier et al. (2017) found that, even when former military members integrated back into the general populace (i.e., exiting the military institution and entering educational settings for this specific study), veterans who evidenced enough symptomology to warrant treatment collectively experienced greater stigma shame associated with help-seeking and, in spite of the necessity of mental health assistance, generally decided against treatment, despite the provision and promotion of available traditional help, due to the intensity of deeply ingrained stigma. This study bears particular significance to understanding a contributing aspect of generalized stigma analysis, as it showcases the ability of military-based mental health stigma to affect the stigma existing in the larger society, as the service subpopulation will eventually merge into local communities upon enlistment/commission fulfillment, adding, therefore, to the overall national psychological statistics and stigma perpetuation. Conversely, therefore, logic dictates that eradicating stigma within the military will, thus, have the inversely healthy effect of eventual stigma reduction within the country.

The aforementioned stigmas concerning mental health within the military exist during active service and, similarly, often persist following service competition, leading to delayed treatment and/or help-seeking behaviors even after the resumption of civilian status (Gibbons, 2014). Studies focused on military mental health have identified two key, commonly occurring barriers to seeking treatment for mental health concerns, which consist of 1) personal embarrassment regarding the need for treatment and general, and 2) externally vocalized stereotypes regarding psychotherapy, particularly in regards to the equation of requiring therapeutic assistance to an assumed weakness of character (Held & Owens, 2013).

Recent case studies specifically pinpointed that the most commonly occurring stereotypes creating stigma towards help-seeking behaviors within the military include the fear of shame, the potential judgment or devaluation of the individual, negative effects on workplace advancement, and doubt of proficiency by co-workers and supervisors (Hernandez et al., 2017).

Recent Military Attempts to Eradicate Stigmas

To address recent improvements within the arena of mental health, the military now recognizes the potential harmful effects of military life on psychological well-being, particularly acknowledging the strain of chronic pressure and/or stress derived from attempting an adequate home-work life balance while still heavily investing in the occupational force. The military additionally sponsors studies to track suicide trends and, after observing years of steady incline, has started branch-wide resiliency days, wherein soldiers, sailors, marines, and airmen engage in day-long seminars, instruction, and open communication about effective coping mechanisms and the components of whole being wellness (Trail et al., 2017). The military similarly holds mandatory seminars on suicidal awareness, monitors alcohol consumption through physical exams, and conducts psychoeducation on the four main helping agencies readily available for military mental health, which include the base mental health office that consists of a full military staff, counseling provided by civilian mental health providers at the department of Military and Family Life Counselors, or MFLC, or Military OneSource, which connects members with an off-base provider and the option to receive 12 free therapy sessions without an official diagnosis, and the Chaplain Corps, or the religiously-trained military members (Trail et al., 2017). However, one weakness currently surrounding the military mental offices, which are located on every military base in both foreign and domestic locations, lies in the lack of confidentiality between the appointed counselors and their military clients. As mentioned, a

primary stigma connected with hesitancy in seeking help from the mental health offices stems from fear of losing one's current occupational standing and/or security clearance due to a diagnosis that deems the member mentally incapable of completing daily core tasks (Prosek & Holm, 2014). This concern fosters from the direct communication between unit commanders and the mental health officers that conduct counseling sessions, as a commander can request information regarding a member attending such therapy, including the receipt of session content and the relay of all relevant communication that the commander deems pertinent, breaking the standardized, ethical confidentiality agreements required within the civilian world (Hall, 2016). Thus, stigma cannot be eradicated while being actively perpetuated, as the lack of confidentiality in one officially endorsed helping agency causes a distrust of similar agencies, even though the other three non-medical counseling options do uphold confidentiality in a more ethical manner. Therefore, an alternative treatment option with no connections or ties to distrusted agencies can bolster the propensity towards help-seeking behaviors in the form of yoga class attendance, justifying the necessity of funding such programs. Moreover, in regard to suicidality within the military, one case study found that members struggling with suicidal thoughts and/or intent often successfully hid these intentions, evidencing none of the common warning signs of suicidal ideation, due to a fear of help-seeking consequences and mental health stigmas (Langhinrichsen-Rohling, 2011). Yet, while, as mentioned, studies focused on military mental health reveal consistently high trends regarding suicidal attempts and completions when compared with the civilian population, current military mental health facilities fail to promote effective methods other than therapy to treat the underlying anxiety causing such inclined behaviors (Engel, 2013). Thus, the combination of the previously mentioned stigmas and the unsuccessful nature of stigma eradication within the American Armed Forces creates a hesitancy for help-seeking behaviors for military members with mental health issues and/or concerns. Yoga, however,

could serve as an alternative treatment for anxious servicewomen, particularly as there exists no overarching stigma towards yoga in either the military or the general populous.

Mental Health in Women

Before addressing mental health concerns for the subpopulation of military females, an overall understanding of women's mental health, with an emphasized comparison against the prevalence of male statistics, must be achieved to understand the societal trends that can bleed into the subsect branches of the populace. First, according to Ströhle et al. (2018), females remain between doubly or triply predisposed to developing anxiety disorders than their male counterparts. Women can also experience anxiety at varying integral ages, due to hormonal fluctuations at the beginning and termination of menstruation, gestation, and the period after birth (Hantsoo & Epperson, 2017). Unlike male experiences of testosterone surges, spikes and drops in estrogen have been scientifically linked to anxious manifestation, both inside and outside of testing labs (Borrow & Hands, 2017). Interestingly, however, the use of estrogen-based remedies to balance fluctuating levels received mixed results, wherein the existing possibility of increasing already elevated anxiety makes hormonal therapy and similar medicinal treatments a riskier option than other forms of treatment, such as therapy or similar alternatives (Borrow & Handa, 2017). Women possessing higher than average amounts of testosterone also tend to have more general anxiety and anxious episodes, such as panic attacks, evidencing a distinct biochemical vulnerability regarding anxiety (Stanikova et al., 2019).

Regarding hormonal changes, per Sheffield et al. (2016), approximately one-fifth of all postpartum women experience depressed mood beyond the typical two weeks of "baby blues," with an additional one-tenth of new mothers reaching clinically significant anxious distress. Despite the nuisances of women's mental health during the various stages of conception, gestation, and birth, wherein women tend to develop anxious and depressed

moods at an increased rate, military case studies lack adequate coverage of such lifetime events, simply diagnosing military women with general depression and anxiety diagnoses, adding a specifier to designate natal influence, which does not fully examine, explore, or explain the specific intricacies of these life events (Condon, 2010). Moreover, research focusing exclusively on women and women's issues remains a relatively new field, as subtle male domination in the world, including in the foundational psychological realm, can be found throughout various societal constructs, causing women to frequently stifle vocal expression of thought processes, opinions, and internal narratives (Rahmanian et al., 2020). Thus, research focusing on military females will present more concrete information on the effects of yoga for two underrepresented sample populations, military members and women.

Additionally, when compared to men, research shows that, on average, females are exposed to more potentially traumatizing or stressful circumstances within the course of their lives throughout the globe (Kvrgic et al., 2013). According to the United States Department of Veterans Affairs (2019), approximately 60% of females and 50% of their male counterparts are exposed to a minimum of singular traumatic event throughout the average lifespan, wherein traumatized females remain overwhelmingly more vulnerable to becoming victims of sexual abuse. Similarly, a quarter of American women report at least one instance of domestic violence at the hands of a loved one (Huecker & Smock, 2020). These aforementioned traumatic exposures stemming from abuse naturally cause females to express anxious symptomology warranting a clinical disorder diagnosis more frequently than men, as women suffer from diagnosed posttraumatic stress disorder at a six percent increase when compared to similar statistics for males (U.S. Department of Veterans Affairs, 2019). However, it remains imperative to note a possible discrepancy, which is to say, inaccuracy, in such statistical reporting, as Vranda et al. (2018) found that a significant number of females elect not to report their experienced traumas to authorities, medicinal physicians, mental

health professionals or, occasionally, social supports due to the potential of not be believed, personal sense of shame and increased anxiety when discussing the situation. Women also experience dysfunctional processing or overactivity of Hypothalamic Pituitary Adrenal (HPA) reactions more often than men do, causing long-lasting distress responses even after the removal of a particular stressor, which in turn can lead to chronic anxiety (Riecher-Rössler, 2017). The female gender additionally suffers from disproportionally elevated instances of negative body image, body dysmorphia, eating disorders, relational distress, and occupational and social prejudice, often resulting in financial and promotional inequality (Riecher-Rössler, 2017). Regarding inequality, McGoldrick et al. (2016) state that women also accrue additional stressors due to an imbalance in familial responsibility, wherein females traditionally act as the primary childcare provider, handle the majority of domestic chores, and care for aging parents and in-laws, despite lacking the equipment and medical training needed to acquire confidence in their ability to care for sick, elderly family members, increasing, therefore, daily stress for women. Beneficially, however, women are similarly more likely to confide in others regarding these events, often choosing to voluntarily rely on social support systems to process emotional and mental difficulties (Riecher-Rössler, 2017). This propensity to actively seek out support allows women to process stress, distress, and trauma through gentle exposure therapy outside of clinical sessions, often healing trauma before it can reach a disordered level.

Conversely, despite the increased likelihood of women to both experience diagnosable anxiety and then, subsequently, seek psychological intervention more than men, new trends in research show that women consume mood-altering pharmaceuticals at a rate that is two times higher than the medicinal consumption of men, reaching a degree that Bacigalupe and Martín (2020) argue extends beyond the statistical warrant for such adherence. In fact, psychological medication remains not only significantly marketed towards women, but

medicinal professionals report a propensity to prescribe medication to their female clients more often than to their male patients (Bacigalupe & Martín, 2020).

Interestingly, despite experiencing increased life stressors, women commit suicidal completion less than their male counterparts, a statistic that researchers believe may be due, in part, to women's propensity towards natural help-seeking behaviors, such as the aforementioned reliance on social supports. Additionally, many mental health treatment options, both traditional and alternative methods, fixate on the normative expression of emotionality, vulnerability, and mental sharing, which, according to Liddon et al. (2018), women not only more readily gravitate towards, but also possess an inherent ability to more easily participate in these efforts. Likewise, the research of Grubbs et al. (2015) discovered that American females tend to stick with counseling programs for longer than U.S. males, having more favorable feelings about mental health service attendance in general, often vocalizing a desire to both change and continue with treatment techniques as well. Finally, women attempt more alternative options to traditional mental health treatments than men, with recent research revealing an 11% increase in the likelihood to going outside of counseling sessions to address psychological issues (Woodward et al., 2009). Therefore, although the average female faces disproportionate life stressors and anxiety disorder diagnosis, women also actively seek out methods, both conventional and unconventional, to treat anxious mood and general distress at a higher statistical significance than men.

Mental Health in Military Females

While the military evidences clear degradation of mental wellness as compared to the civilian population, equally clear worsened mental health evidences among female service members than among male service members. In regard to suicidal ideation, while male service members typically experience elevated suicidal thoughts and subsequent suicidal attempts following wartime exposure and/or participation, female military members more

commonly experience elevated suicidal ideation due to relational issues, such as marital termination, temporary familial separation, or loss of a spouse (Blosnich et al., 2016). Notably, among the general population of American citizens, combining both military members and civilians, the propensity towards suicidal action has doubled among the female subsect within recent years (Winerman, 2019). Thus, this study indicates that the everyday life stress of working within a military environment remains an unresolved and damaging influence on female mental health, regardless of non-deployment. Research also discovered that females who served in the military were more likely to evidence enough symptomology to warrant a diagnosis of PTSD when compared to military men and the general non-military population (Lehavot et al., 2018). Further research showed that being male acts as a preventative element against the development of posttraumatic stress disorder (PTSD), while being female and serving in the enlisted ranks both serve as accelerants to PTSD development (Levin-Rector et al., 2018). As PTSD classifies under the larger umbrella of anxiety disorders, experts have thus determined that operating in environments like the military, which contains daily, repetitive stress, can cause anxious-based mental disorders to develop, particularly anxiety disorders, even without exposure to combat (Lin et al., 2015). Notably, in connection with these aforementioned results, PTSD diagnoses fall behind unspecified anxiety disorder classifications in terms of quantity among military personnel, for many cases of military anxiety disorders fail to obtain the initial PTSD criterion, the triggering of symptoms by a traumatic event, evidencing that the chronic stress of military life remains enough to spark an anxiety disorder (Lovering et al., 2013). Not only do women remain at a higher risk for experiencing both anxiety and anxiety disorder-inducing life events, such as abuse and assault in both childhood and adulthood, studies indicate that anxiety possesses more adverse, long-term effects on women’s mental health than their male counterparts’ well-being (McLean et al., 2011). Enlistment or commissioning within the

Armed Forces can specifically exacerbate negative conditions for women already suffering from mental health conditions, such as identifying, pre-existing depression and anxiety disorders (Gaska & Kimerling, 2018). Additionally, females on active duty remain more likely to experience poor mental health and present more symptoms consistent with mental disorders than those working with the military on a part-time status (Seelig et al., 2012). However, while this study attempts to offer suggestions to explain this contrast, retestable hypotheses were neither predicted nor tested, leaving an unexplained gap concerning coping mechanism differences between active-duty and partial-duty female military members.

Furthermore, although women serving on active duty currently comprise nearly 15% of all U.S. service members, a statistic that historically represents the greatest number of women in the armed forces since its official conception, females in the military remain chronically underserved and under-researched, with hardly any empirically supported literature focusing solely on women, as case studies traditionally mix genders during experimentation (Boyd et al., 2013). Additionally, females currently comprise the most increasing sub-population within the American Armed Forces, as women make up 14.5% of all full-time service members, 18% of part-time service members and 9.4% of former service members. However, despite the increasing number of deploying females, which recently reached 12%, women in the military face obstacles to receiving mental health treatment, including concern for their reputations per their co-workers' vantage points and an inability to connect with service providers, as many military mental health offices employ all-male teams, who may not extend empathy towards and/or possess an understanding of the unique mental health needs facing female military members (Koblinsky, 2017). Therefore, despite experiencing increased representation within the military, women in the military remain less likely to find understanding for their unique life stressors and connection with military-based service providers.

Emerging Alternative Treatments

While surveys revealed that adult anxiety levels within the United States have been annually increasing, researchers additionally found that doubts concerning therapeutic effectiveness, potential negative consequences, pricing, and the ability to reach practitioners cause significant hesitancy in an individual's decision to seek anxiety reducing help via traditional counseling and/or medicinal options (de Manincor et al., 2019). One challenge that arises in the advancement of normalizing alternative treatments to the point of widespread usage lies with practicing mental health professionals, who, according to a study conducted by Bastemura et al., (2016) self-profess a lack of understanding of non-traditional therapies, as well as a lack of connection with available resources or professionals specializing in alternative or complementary healing methods. Moreover, Schulz and Hede (2018) discovered a dichotomy regarding alternative treatments, for, in recent years, as individuals begin to distrust traditional wellness practices, which is to say, scientific communities consisting of physicians and psychologists authorized to prescribe pharmaceuticals, the more desire the average American has towards alternative treatments. In fact, this propensity can be seen particularly evidently in the arena of mental health, as citizens have started to favor the concept of homeopathic, organic whole being wellness (Schulz & Hede, 2018). The widespread dissemination and availability of the information available in the modern age via the internet and global Wi-Fi have specifically contributed to this challenging of convention and the subsequent seeking out of alternative options (Schulz & Hede, 2018). Moreover, when it comes to mental health, the diagnosis of disorders, and the treatment of distress that exists under a clinically diagnosable level, Ströhle et al. (2018) reiterate the ethical guidelines of counseling that mandate an active role for the client in his/her therapy journey. The active role of choice creates a sense of self-sufficiency and autonomy during a time wherein the client may feel a distinct loss of control, and choice of treatment type in particular can give a

client the ability to make an informed, independent decision concerning his/her own health (Ströhle et al., 2018). However, when a disconnect exists between licensed and/or boarded mental health professionals, whether they be psychotherapists or psychiatrists, and all available and efficacious alternative treatments, these professionals fail to fulfill their ethical responsibility to present all options for treatment and, thus, secondarily deny the upmost benefit for clients, particularly those who possess personality traits congruent with untraditional measures. Since the level of education acts as one factor that favorably indicates a propensity toward attempting non-traditional treatments, advocating the need for military-wide psychoeducation on alternative treatment methods and vocal support of such methodologies remains an ethical obligation on the part of the military (Zhang et al., 2015). Research, therefore, which seeks to evaluate equivalent efficacy and analyze safe practices of alternative anxiety treatment, such as yoga, provides academically based, pertinent information assuring professionals of the benefits of various measures to reduce anxious mood. Reducing anxiety naturally increases, therefore, overall mental health, with a program that exercises an individual's mind, body, thoughts, and actions at a reduced cost to and reduced stigma risk of traditional therapy attendance, such as yoga, offering visible potential benefit. Furthermore, not only does price play a role in counseling avoidance, but recent research suggests that religious beliefs and ethnic demographics influence a positively correlated hesitancy toward therapy and inclination towards alternative mental health treatments as well (Thirthalli et al., 2016). Readily available facts and statistics related to alternative measures, which, again, provide mental health professionals with the familiarity and comfort with the topic necessary to promote these options that interest the public, additionally allows for unconventional healing methods to co-mingle with traditional treatment, creating the possibility for augmented client benefice via the reinforcement of

mindfulness techniques and practices during both counseling and yoga, acupuncture, massage, or meditation sessions (Schulz & Hede, 2018).

Exercise as an Alternative Treatment

As mentioned, recent research has shown that exercise that reaches a particular intensity can effectively reduce anxiety (Aylett et al., 2018). Another particular benefit of participating in an alternative treatment such as general fitness lies in the current counseling crisis: while the majority of counselors hold lengthy waitlists, gyms, fitness classes, and online exercise regimes can be started immediately (Aylett et al., 2018). Moreover, the research of Herring et al. (2014) revealed that working out reduced anxiety at an equivalent rate as talk therapy attendance, even when compared to the psychology industry's proclaimed gold standard of anxiety reduction, cognitive behavioral therapy, or CBT. However, despite the apparent benefits of regular fitness, high-intensity exercise comes with inherent risks, which can range from muscle soreness/tearing, to sprains, or bone breaks (Pihlajamäki et al., 2019). This risk becomes increasingly concerning when considering that the military remains more susceptible to injury than the general population. In fact, new case studies showed that being in the military, particularly on active-duty status, for a decade more than doubled the rate of bodily harm even when members had never been exposed to increased workplace risk, such as deployments or combat exposure (Morin, 2011). Additionally, there exist several gaps in existing research showing the efficacy of exercise to reduce anxiety. First, research indicates that mindfulness proved a major contributing factor to anxiety reduction when examining a combination of fitness routines, which, notably, included yoga (de Bruin et al., 2018). Yet, routine exercise can often be completed without the focus on breathwork, proper form, or being aware of the body's natural limitations, unlike yoga, which holds those elements are foundational tenants of the practice. Secondly, the vast majority of case studies that explore the effects of anxiety under-utilize minorities within their populations (Sheehan

et al., 2015). This aspect becomes clinically significant when analyzing the military's rapidly diversifying population, wherein recent military demographic polling revealed that 43% of servicepeople identify as part of an ethnic minority (Barroso, 2019). Moreover, researchers often neglect females within such exercise-based case studies, as males make up the majority of the military population, making them easier to acquire for research populations (Sheehan et al., 2015). Lastly, unlike the high dropout rates of fitness research, yoga continues to positively trend upward in popularity, boasting lower dropout statistics than traditional exercise and therapy (Woodyard, 2011). Therefore, exercise as a means of anxiety reduction faces several modern obstacles while mental health concerns conversely continue to increase among Americans. Thus, the comparative statistics indicate that individuals would be more likely to continue yoga practice than persist with a consistent fitness routine, with less risk of injury as well, highlighting the potential benefits of using routine yoga practice as an alternative treatment.

Potential Benefits of Yoga for Military Members

Specifically, regarding the alternative mental health treatment methods most likely to appeal to this specific population, research hints that military members will willingly and successfully engage in meditating, mindful practices, and yoga, which simultaneously and inherently contains both of the aforementioned elements beneficial to stress reduction, meditation and mindfulness, as yoga combines all of these most preferred alternative treatment methods, which in turn could elicit increased benefice (Taylor et al., 2019). When evaluating the effectiveness of alternative treatments for military females, while men may experience reluctance and uncertainty towards attempting alternative treatment methods, women report a general willingness to attempt new therapy techniques, remaining more open to testing healing options outside of therapy sessions, often with increased clinically significant results when compared to their male counterparts, with accompanying decreases

in treatment risk for women using nontraditional measures (Alwhaibi, & Sambamoorthi, 2016). Notably, with experimental alternative treatments, the potential risk remains a legitimate concern, particularly with a mental health professional's ethical mandate to avoid and mitigate possible harm to the client due to and during treatment. Yoga not only assuages anxious mood and non-diagnosable anxiety levels, but it accomplishes this goal with minimal risk (Parthasarathy et al., 2014). Unlike many medicinal treatments for chronic stress and/or anxiety, which often elicit negative physical and psychological side effects that cause hesitancy towards future pharmaceutical adherence, yoga offers a potential treatment with low side effects, offering a yet another counter for the barriers perpetuating existing treatment hesitancy (Li & Goldsmith, 2012). In the past decade, clinicians have successfully implemented yoga practice to decrease expressed anxiety disorder symptomology. However, while private citizens have engaged in this alternative treatment, the use of yoga to reduce anxiety for military members remains minimal and exploratory, generally focusing exclusively on posttraumatic stress disorder and deployment-related anxiety and ignoring the daily chronic stress facing military members that can ultimately evoke anxiety on a clinical level (Cushing et al., 2018).

Furthermore, as mentioned, yoga practice evidences a clinically significant minimal dropout rate. In particular, compared with traditional case studies that utilize talk therapy treatments, which typically experience a 30% participant dropout rate, yoga-based research generally evidences a 15% dropout rate, estimating a 50% increase in likely participation (Cramer et al., 2016). In addition to this minimal dropout rate, yoga practice also helps participants naturally develop coping mechanisms. While yoga practice, per a case study that utilized an exclusively female population, can reduce overall anxious mood for women, the exercise can additionally assist with controlling still existing symptomatic expressions, providing coping methods to handle current issues and potential anxiety in the future (Rahimi

& Bavaqar, 2010). Specifically, yoga practice naturally implements meditation, deep breathing, mantra development, false narrative correction, and grounding techniques, inherently teaching mental health skills in a non-clinical environment, which can be used to combat future episodes of anxiety (Desai, Tailor, & Bhatt, 2015). Yoga practice also fosters a sense of community and social support, for practicing yoga in a group setting builds social support by providing a community based in shared mentalities, beliefs, and life experiences (Tiwari, 2016). The fostering of a community of support has likewise been proven to serve as a protective factor against the development of mental disorders, even in cases where military women were exposed to stress and trauma (Seeling et al., 2012). In turn, relying on previously established social supports during times of distress proves clinically significant to successfully cope with anxiety (Roohafza et al., 2014). Lastly, while men tend to seek out more traditional forms of exercise, even when intentionally engaged in an attempt to release stress, women comprise approximately 70-80% of all current yoga participants (Alwhaibi & Sambamoorthi, 2016). Thus, this specific alternative treatment remains structurally geared towards women, increasing both overall appeal and propensity towards continued participation.

Positive Effects of Yoga on Anxiety

To begin, at its core, yoga can be classified as either a religious experience, as is the case for those who adhere to the traditional religion of Hinduism, or as an exercise type, which is the mentality for the vast majority of Americans practicing yoga, for yoga uses a combination of systematic breathing and physical motion. These two elements can be integrated, often by those of differing faiths incorporating one's own beliefs and individual religion into the exercise component of yoga and meditating on personally held religious ideas during times of guided reflection. However, the Westernization of yoga holds some controversy among those following the religion that founded the practice of yoga. In

particular, with the personalization of yoga beliefs, many Hindi people raise concern over the desecration of this sacred, religious experience due to profit-driven marketing techniques that veer the practice far from its original intent of harnessing inner peace (Webb et al., 2020). Therefore, it remains imperative to maintain a courteous mindset regarding the practice and to incorporate personal belief systems into yoga practice in a manner that displays respect for the initiating culture and faith system (Webb et al., 2020).

As a religious element, yoga can provide anxiety reduction through faith-based reflection and practices. Specifically, according to Choudhary (2017), yoga can strengthen the bond between an individual and that individual's assumed higher power. In turn, this improved and closer relationship bolsters a personal understanding of this higher power and the Power's dwelling inside the individual, cementing a connection that emphasizes continual companionship and support, even through life's difficult challenges and seeming isolation (Choudhary, 2017). Zarzycka et al. (2019) back this claim through research as well, for a study containing an entirely female population undergoing distress revealed that when judgment and shame cease in the domination of religious reflection, faith can instill and grow hope, which in turn directly correlates to both current anxious reduction and future anxious protection. Lastly, since religion can be described as a lifestyle involving a personal relationship with a higher power, research conducted by Krátký et al. (2020) revealed that the consistent practice of religious observance, as evidenced by ritualistic adherence, reduces anxious mood and anxious symptoms, with the dedication to faith-based rituals influencing a higher, more rapid rate of anxiety reduction. In other words, the more the participants practiced certain religious rituals, the more decreased their anxiety levels became, advocating for lifestyle changes to include yoga as a regular practice in order to be used as an effective coping mechanism (Krátký et al., 2020).

Next, when analyzing yoga as an exercise science, per research regarding nontraditional treatments as a whole, results indicate that methods involving physical movement could provide an efficacious alternative to talk therapy and/or pharmaceuticals while presenting less risk than medication consumption (Stonerock et al., 2015). However, investigative efforts on this front remain in the infantile stage, hinting at, rather than solidly proving, the validity of treatment (Stonerock et al., 2015). Yet, these preliminary results warrant further exploration through additional case studies due to the signs of the potentially equivalent benefice. The research of Bischoff et al. (2018) found similar initial results when comparing a branch of the most widely used and implanted theoretical orientation, cognitive behavioral therapy, to minimize anxiety. Specifically, the study's use of cardiovascular activity helped diminish symptomology connected with diagnosable mental disorders within the broad categorization of anxious mood. Due to the link between intentional physical movement, brainwave activation, and deep breathing, workouts have additionally evidenced help in restoring mental and emotional wellness that has degenerated with the diagnosis of somatic diseases, particularly decreasing depressed and anxious mood (Li et al., 2020).

Beck et al. (2020) found success in reducing anxious mood in a case study involving participants diagnosed with Parkinson's disease, which linked exercise as the specific causation of increased confidence and specific cranial focus experienced by participant, due to exercises natural incorporation of all four senses, serving as a grounding practice leading to reduced anxious mood. This study used a program called Parkinson's Disease Sensory Attention Focused Exercise, or PD-SAFEx, which integrates several core tenants of yoga, such as the elongation of muscles, core strength, and stability, further advocating for the use of yoga in anxiety reduction due to these positive results (Beck et al., 2020). While these results do initially appear promising, these studies focus on very individualized somatic issues, wherein anxiety occurs comorbidly due to the primary physical condition. Thus,

additional research is needed to evaluate anxiety on its own, wherein anxious mood presents as the primary presenting concern, to verify that active anxious reduction is not influenced by simply bettering somatic wellness, as it could be argued that if exercise or, more specifically, yoga, increased physiological fortitude and eased physical symptoms, mental health would connectively increase as a side effect of lessened overall negative symptomology. Alongside the specific parameters found within these aforementioned studies, the research Ólafsdóttir et al. (2018) echoed the previously mentioned idea that routine physical movement provided equal relief from anxiety when compared to a variation of CBT, adding additional benefits that CBT could not replicate, including increasing the body's strength and somatic health, advocating for yoga as an effective alternative exercise treatment for mental health concerns.

Yoga practice also treats expressed somatic stress symptoms, alleviating anxiety-disordered tension and pain, hinting at a secondary benefit for military members, who remain frequently required to perform physically taxing movements as a mandatory part of their occupational requirements (Yoshihara et al., 2014). Physical movement in combination with yoga's natural deep breathing practices reduces tension on a mental and physiological, or muscular, level (Francis & Rhonda, 2019). Relaxation and grounding techniques commonly associated with traditional yoga practice, including meditation and deep breathing, directly impact amygdala and frontal cortex activation, regulating threat detection perception, which, in the case of consistent anxious mood becomes skewed and, thus, permanently heightened. Therefore, habitually practicing yoga reduces this cementation of perpetual flight-flight-freeze modality through physical movement's self-regulation (Desai, Tailor, & Bhatt, 2015). Yoga practice, specifically the incorporation of mindfulness practices, additionally compacts the expansion of the amygdala, lessening the likelihood of developing clinically diagnosable anxiety while simultaneously increasing rational emotive processing (Gotink et al., 2018). While the vast majority of studies focusing on the correlations between yoga practice and

consequential anxious reduction fixate specifically on PTSD symptom diminishment, the results of emerging studies do hint at effectiveness in a molecular capacity, specifically bolstering healthy emotive processing in females who experience elevated levels of daily stress (Harkess et al., 2016). One weakness when addressing somatic verification of yoga's anxious reduction lies in blood pressure and heart rate evaluations, particularly as both alter during exercise, muddling whether the physical movement in general or yoga's specific mindful physicality cause such decreased alterations, warranting more studies to directly compare yoga against other forms of exercise to truly identify where the inherent benefit lies.

In addition to augmenting physical health, yoga also appears to clinically increase overall mental health, for, not only does yoga reduce anxious mood, but case studies additionally evidence an overall increase in mental well-being in those who practice yoga on a regular or semi-regular basis (Zoogman et al., 2019). Specifically, recent research results revealed that yoga diminished self-reported anxiety both for those below the threshold for a formal diagnosis of an anxiety-based mental disorder and for those with diagnosable PTSD (Li & Goldsmith, 2012). One case study exclusively involving women revealed that anxiety levels lowered from severely anxious to mild and/or moderately anxious after yoga practice (Mullur et al., 2014). In a second study which boasted an entirely female sample population, routine yoga practice showed decreased Depression Anxiety Stress Scale-21, or DAS-21, scoring, evidencing yoga's benefice in resolving not just clinically diagnosable anxiety and co-morbid depression but also in treating chronic stress (Shohani et al., 2018). The research of Sharma (2014) supports this claim with additional empirical support, as the case study revealed the universal effectiveness of yoga to combat everyday life stressors, difficulties and challenges, even when procedures lacked standardization. In general, compared to non-yoga practice participants, research additionally revealed diminished psychological distress in

those who evidenced anxious and depressed mood prior to yoga exposure, with results clearly evidenced following eight weeks of habitual practice (Maddux et al., 2018).

Recent research indicated that sustained yoga practice could prevent elevated stress reactions by promoting a sense of stability and an individual's control over internal stability even in the midst of chaos or distress (Kiecolt-Glaser et al., 2010). In a case study involving students, implying higher stress levels due to new environments and academic pressures, results revealed the rapid and sustained benefit of active yoga practice, meaning classes or instruction that combined traditional pose holding and deep breathing with power yoga flow (Smith et al., 2011). Due to anxiety's high prevalence and some shared symptomatic expressions with other mental disorders, often leading to inaccurate differential diagnoses, routine yoga practice could secondarily or inadvertently treat undiagnosed anxiety, increasing overall physical and mental wellness (Katzman et al., 2014). In addition to simply reducing anxiety, tension, and distress, yoga practice can also stave off long-term cognitive effects of stress, reducing the risk of mental and memory impairment in later life by regulating reactivity of the sympathetic nervous system and bolstering reactivity of the parasympathetic system (Gothe et al., 2016).

When implemented to treat anxiety and its subsequent physical symptoms, yoga evidences rapid healing. Per Benvenutti et al. (2017), participation in as little as one session of yoga can simultaneously reduce distress and bolster assurance in an individual's ability to overcome anxious mood, instilling hope for the future through a belief in one's personal capacity to recover (Benvenutti et al., 2017). One exploratory study found that moving through yoga poses for as little as 30 minutes provided near-immediate diminishment of stress, bearing particular significance to occupational stress, as all the moves practiced within the study were conducted within the workplace (Melville, 2012). Moreover, Lemay et al. (2019) definitively found the practice effective in minimizing chronic stress and anxious

mood in less time than therapeutic effectiveness of counseling, which traditionally requires a minimum of eight weeks of therapy.

According to Shohani et al. (2018), stressed participants also responded favorably in a Vinyasa-based yoga retest case study focusing on the reduction of anxious, depressed, and/or stressed mood with an entirely female population during a relatively short study duration, as the experiment lasted just one month. However, this research also bears some inefficiencies, particularly since participants were required to attend yoga classes three times a week, for at least an hour each session (Shohani et al., 2018). Since the average person attending counseling sessions visits his/her therapist's office just once a week, with twice weekly sessions only typically occurring for severe disorder symptomology or traumatic exposure, wherein the typical therapy session lasts for an hour or less, the perceived benefit from this study could derive from the additional treatment frequency rather than yoga's inherent treatment methods (Bruijniks et al., 2015). Therefore, additional research operating on a one-to-one comparison of treatment options must be conducted to elicit a truly proportional analysis of benefice between yoga and traditional talk therapy to reduce anxiety. Furthermore, with the previously mentioned research, while studying commonly comorbid mental health issues, such as depression and anxiety, increased mood could be more related to depression relief than the amelioration of anxiety (Shohani et al., 2018). Moreover, this particular experiment's age inclusion/exclusion principles limited the participant's age, directing the restriction of acceptable ages to a range of 27 to 40 years old, eliminating, therefore, those women on the younger age spectrum, causing a distinct experimental age gap. This restriction remains notable for military populations, for 50.3% of enlisted military members, of all genders, classify as under the age of 25 years old (Department of Defense, 2015). Thus, to prove efficacy for the majority populace of the military, to include both

females and, additionally, their male counterparts, participant requirements in related future studies should be more inclusive towards broader age variants.

However, research did verify that yoga does additionally decrease co-morbid depression, for, in cases where depression occurred co-morbidly with anxiety, some depressive symptoms were lessened following the practice of yoga, although anxious symptomology reduced at a more notable rate than depression (Rahimi & Bavaqar, 2010). Based on the research's conclusion, yoga could be a viable alternative to traditional therapy and/or medication treatments for issues that commonly present comorbidly with anxiety, further increasing overall mental wellness (Cramer et al., 2018; Prathikanti et al., 2017). Comorbidity of depression bears clinical significance for individuals who experience both chronic undiagnosed and diagnosed anxiety, as the two disorders simultaneously occur at such an elevated rate that mental health professionals can still waiver between effective diagnoses, particularly as depression and anxiety can act cyclically, as primary existing symptomology furthers the advancement of the secondary disorder (Demyttenaere & Heirman, 2020).

Conversely, however, in a conflicting case study, although mildly effective with depressed mood, the research of Vollbehr et al. (2018) revealed that the practice of Vinyasa yoga did not showcase clinically a noticeable reduction of anxious mood in case study participants, despite the evidence from other studies indicating reductions in stress and anxious mood following Vinyasa yoga practice (Maddux et al., 2017). Vinyasa yoga, while a popularly practiced form of Hatha yoga, differentiates from other yoga forms by emphasizing the connection of breathwork to physical mobility and transitioning from pose to pose at a significantly more rapid pace (Woodyard, 2011; Tay & Baldwin, 2015). Therefore, the question arises as to which forms of yoga do elicit benefice if not all actually do increase mental health. If Hatha yoga, the most fundamentally beginning type of yoga that relies on

easy movement, did not provide clinically significant reductions in anxiety while other forms, such as Vinyasa, Ashtanga and Power yoga do, a common yet active form of yoga must be tested with this population, mandating the evaluation of Vinyasa yoga. Furthermore, yoga studies involving anxiety lack universal standardization, not only in the type of yoga tested and/or implemented but also regarding weekly session frequency, average session duration and length of weeks involved in the study. Therefore, comparing and recreating such experimentation proved challenging, as no common regulations exist within the research.

Summary

Female military members are routinely exposed to increased stress, causing frequent anxiety. However, due to existing barriers in help-seeking behaviors, such as negative stigmas surrounding mental health in the military and prejudices against women in a majority male workforce, women remain less likely to attend counseling to address mounting anxiety, necessitating effective alternative treatments, such as yoga, to reduce perpetual anxiety mood. The positive features of practicing yoga in regard to anxiety reduction that were explored in this review consisted of low dropout rates, the development of long-lasting coping mechanisms, the sense of community and enhancement of social supports, and the pre-existing appeal of yoga to women. Additionally, some positive effects of yoga on anxiety were discussed as well. Most notably, yoga practice leads to the rapid dissolution of anxious mood, decreases self-reported anxiety, and similarly decreases co-morbidly occurring depression, elevating overall mental health. However, to definitively prove yoga's efficacy in reducing anxiety in female military members, additional research should be conducted to more specifically address the existing gaps concerning gender and military service that are evidenced in existing studies.

Chapter Three: Methods

Overview

Within this section, the overarching methodology guiding the implementation of the study will be discussed, beginning with a restatement of the study's research questions. As this study was designed to test whether practicing Vinyasa yoga can more effectively reduce anxiety and produce greater overall mental wellness than engaging in gym-based exercise among female military members, the methods used to design the study and select the sample population, including requirements and exclusionary issues, will be explained. Next, the measures and scales used to select members and chart anxiety, anxious symptoms, and well-being levels will also be discussed. Lastly, this section will delve into statistically relevant information, presenting the variables, statistical procedures, validity, and reliability of the selected scales.

Design

The selected design for this study was a quantitative design, as the main research hypotheses focused on measurable statistical numbers (Heppner et al., 2015). More specifically, an experimental survey design was implemented to gauge significant differences in anxious mood and overall well-being between the groups practicing different types of exercise. Additionally, all questionnaires utilized during the study were limited-answer surveys, rather than the interview-style probes of qualitative research. The study selected these limited-answer surveys to avoid vast response variation, employing specific questions to elicit the testing of certain hypotheses and identify concrete levels of self-reported anxiety (Boeren, 2017).

Research Questions

The research questions for this specific study asked four primary questions, incorporating quantitative data retrieval to identify between groups variance regarding the

population's severity of presenting anxiety and presenting anxious symptoms. Thus, the study's research questions posed the following inquiries:

RQ1: Is there a significant difference in anxiety between active-duty military women that routinely practice yoga, military women who work out at a gym, and military women who do not routinely work out?

RQ2: Is there a significant difference in stress levels between active-duty military women that routinely practice yoga, active-duty military women who work out at a gym, and active-duty military women who do not routinely work out?

RQ3: Is there a significant difference in the amount of worry between active-duty military women that routinely practice yoga, active-duty military women who work out at a gym, and active-duty military women who do not routinely work out?

RQ4: Is there a significant difference in well-being between participants that routinely practice yoga, participants that engage in gym/home gym-based workouts, and those who do not regularly work out?

Hypothesis

In connection with the study's purpose, assumptions and subsequent questioning, the study proposed the following hypothesis:

H_{a1}: Active-duty military women who practice yoga will experience significantly less anxiety than active-duty military women who exclusively work out at a gym and active-duty military women who do not routinely work out.

H_{a2}: Active-duty military women who practice yoga will experience significantly less stress than active-duty military women who exclusively work out at a gym and active-duty military women who do not routinely work out.

H_{a3}: Active-duty military women who practice yoga will experience significantly less worry than active-duty military women who exclusively work out at a gym and active-duty military women who do not routinely work out.

H_{a4}: Active-duty military women who practice yoga will experience significantly higher well-being than active-duty military women who exclusively work out at a gym and active-duty military women who do not routinely work out.

Participants and Setting

Recruitment

It was predetermined that a minimum of 90 women would be selected to complete the surveys, with at least 30 women in each of the three research subcategories. These participants voluntarily opted to join the study via volunteer sampling or self-selection, as no general permission was needed from the participants' military base commanders for this specific survey study involvement. Simple random sampling was then used in order to examine moods and mentalities from a variety of bases to ensure a wide inclusivity not limited to location. For example, selecting individual women from various bases around the country and overseas, rather than gathering women from the same base, avoided undue influence from a certain area.

To provide a motivating incentive for participation, following completion of all pertinent assessments, including the pre-study demographic survey (see Appendix C) to qualify individuals for participation and the subsequent successful fulfillment of all post-treatment scales/surveys, participants could choose to submit their names to be entered into a participation prize raffle. Two names from each subgroup were chosen by random, electronic selection, wherein a total of six winners received a $25 virtual gift card to Amazon.com. The selected winners received an email confirming the winners' email of choice for receipt of the

gift cards the day after the surveys closed, and they received the actual gift cards the day of email confirmation, which varied based on the response time of the individual winners.

Inclusion/Exclusion Criteria

For the purposes of this specific study, there was no mandatory age limits for the participants so as to provide optimal inclusivity of all females in the military, regardless of life stages. However, all participants were required to be American citizens currently serving in the United States military, on active duty, and not guard or reserve status, although no specific branch was required, as participants could come from the Army, Navy, Marine Corps, Air Force, or Space Force. Moreover, participants could be stationed either domestically or internationally (to include all non-continentally assigned servicewomen, such as those stationed in Alaska and Hawaii). For the individuals that expressed an intent/desire to participate in the study, an initial survey that gathered basic demographic and psychological information was issued to verify eligibility. Inclusion criteria, as mentioned, mandated that a potential participant be biologically female, currently serving on active duty within one of the branches of the United States Armed Forces, and holding permanent United States citizenship. Furthermore, through the consent form (see Appendix A), all participants verified experiencing self-reported mild to moderate anxiety. Moreover, all participants verified engagement with their declared form of exercise (either yoga or gym-based workouts) at least three times a week in order to ensure the designated workout plays an active role in contributing to their typical lifestyle (Nie, 2021).

Conversely, exclusion criteria included a past or current diagnosis of posttraumatic stress disorder diagnosis. Participants were also excluded for self-reported elevated alcohol intake and mood-altering medication adherence. For the purposes of this study, elevated alcohol intake for females, per the National Institute for Alcohol Abuse and Alcoholism (2022), was identified as drinking more than three servings of alcohol in a 24-hour period or

more than seven servings of alcohol in a seven-day period. Lastly, participants could not self-identify as doing both yoga and gym workouts in order to not cross-contaminate the assessment outcomes by mixing workout types. All information pertaining to both inclusion and exclusion criteria was gathered through the means of the demographic survey.

Setting

The entirety of the study's data gathering took place virtually using the survey-gathering software called Qualtrics. There existed no specification on how or where the exercise groups engaged in their workout of choice, meaning that the yoga classes could be conducted in either an in-person community setting or online forum. Similarly, no constraints were placed on gym locations for the gym workout group participants, as they could work out at any private, which is to say home-based, or public gym, located at either military or civilian locations.

Instrumentation

To begin, potential participants took a 17-question demographic survey, the purpose of which was twofold. First, this questionnaire provided information that was used to compare similarities in status between the study's subgroups, as the first six questions asked about the potential participant's age, rank, job, base location, and years of service. Secondly, the questionnaire ensured that all inclusion and exclusion criteria are met. Questions five through eight inquired about any past traumatic experiences, current medication use, and amount of alcohol typically consumed per week, while question nine served to determine the type and frequency of weekly workouts. The final three questions identified the most common sources of anxiety for participants, wherein the survey takers could choose between four options, consisting of work, family, finances, and lack of social supports, selecting one for their primary, second largest, and third largest stressor. These concluding questions provided insight into the most common stressors for women on active duty, and, while this

information was not incorporated into this current study, can be useful in conducting future research directed at this particular population.

The study implemented the following four psychological scales to determine mental wellness averages among the three groups.

Generalized Anxiety Disorder scale (GAD-7)

As with every one of this study's assessments, participants self-administered the GAD-7. According to the Anxiety and Depression Association of America, or ADAA (2022), the GAD-7 consists of seven initial questions that determine current levels of anxiety, wherein a shifting scale of zero to three describes a range of anxiety nonexistence to severely distressing anxiety, respectively, experienced in everyday life. At the end of the GAD-7, the numbers selected for each question are added in totality to produce a final score (ADAA, 2022). A total score that rests between zero to four signifies clinically low anxiety levels, while a score between five to nine indicates mild anxiety, a score of 10-14 evidences moderate anxiety, and a score between 15 to 21 implies severe anxiety levels (ADAA, 2022). According to Johnson et at. (2019), this inventory offers elevated internal validity and consistency, wherein the average testing of Cronbach's α equals .82. When taking the GAD-7, clients/participants rate at what level particular anxiety-based symptoms have bothered them over the past 14 days. An example question from the GAD-7 includes inquiring about how often a client/participant experiences *feeling nervous, anxious, or on edge*, which can be rated "Not at all," 0; "Several days," 1; "More than half the days," 2; or "Nearly every day," 3 (ADAA, 2022). Furthermore, a final question asked after the scoring analyzes the impact of these anxious symptoms to determine if the anxiety levels are high enough to negatively affect one's ability to function in occupational, domestic, and social settings. This last question asks *If you checked off any problems, how difficult have these problems made it for you to do your work, take care of things at home, or get along with other people*, with

possible answers including “Not difficult at all,” 0; “Somewhat difficult,” 1; “Very difficult,” 2; “Extremely difficult,” 3 (ADAA, 2022).

Perceived Stress Scale (PSS)

The Perceived Stress Scale evaluates the amount of stress felt due to everyday life circumstances and how impactfully those instances influenced a person’s emotions and thought processes within the past 30 days, focusing on individual opinions on personal stress levels rather than clinical analysis (Cohen et al., 1983). The scale consists of a total of 10 questions and utilizes a scale of zero to four, wherein zero indicates the assessment taker “never” experiences resonance with the question, one indicates the assessment taker “almost never” connects with the question, two indicates the assessment taker “sometimes” connects with the question, three indicates the assessment taker “fairly often” connects with the question, and four indicates the assessment taker “very often” connects with the question (Cohen et al., 1983). According to the assessment creators, the most accurate results derive from answering the probes on one’s first instincts rather than overanalyzing the questions through comparison of the subsequent questions’ wording (Cohen et al., 1983). This self-assessment showcases the most challenging scoring of the selected study assessments, for questions one through four are scored not by their original designation, but where a selection of zero equals four points, a one equals 3 points, a two equals two points, a three equals one point, and a four equals zero points (Cohen et al., 1983). Questions five through ten are scored as usual, with the number selected equating to that same number of scoring points (Cohen et al., 1983). Possible scores for the PSS can run a range between zero and 40. According to Cohen et al. (1983), a score between the numbers of zero to 13 proves the presence of “low” stress, while scores between 14 to 26 indicate “moderate” levels of stress, and a total of 27 to 40 points indicates “high” levels of stress. According to Lee (2012), this inventory offers sufficient internal consistency, wherein Cronbach's alpha for the PSS is

consistently >.70 when researchers employ the test/retest method. An example question from the PSS is as follows, as clients/participants rate how accurately the following statements depict their perceived levels of typical stress:

In the last month, how often have you found that you could not cope with all the things that you had to do?: Never, 0; Almost never, 1; Sometimes, 2; Fairly often, 3; Very often, 4 (Cohen et al., 1983).

Penn State Worry Questionnaire (PSWQ)

As the name indicates, the Penn State Worry Questionnaire determines the amount and severity of worry present in an individual's life (Meyer, 1990). This specific symptom can be used in clinical settings to differentiate betwixt anxiety disorders, ruling out others in favor of generalized anxiety disorder if notable amounts of worry are chronically present in a client's daily life (Meyer, 1990). The assessment consists of 16 questions and uses an atypical, non-stagnant scale of one to five, wherein the questions change attached severity significance depending on the question (Meyer, 1990). For example, a selection of choices one and five alternate between questions to express both the lowest ("not at all typical") and the highest ("very typical") existing levels of worry. Likewise, depending on the question, two and four alternate similarly, standing for occasional ("rarely typical") and frequent ("often typical") worry (Meyer, 1990). Per Meyer (1990), only the average middle selection, represented by the number three, remains consistent throughout the entire assessment, with three standing for an experience that is "somewhat typical" for the assessment. Potential PSWQ scores fluctuate from a lowest possible score of 16 points to a highest score option of 80 points (Meyer, 1990). With the PSWQ, a score range of 16 to 29 determines the non-existence of worry, while a score of 30 to 52 indicates the presence of worry at a psychologically insignificant level (Meyer, 1990). Notably, a score of 52 to 65 describes a concerning level of worry that, while it does not necessarily warrant mental health

intervention, as this amount of worry experiences does not negatively impact that assessment taker's current ability to function, does hint that the assessment taker would substantially increase his/her mental health by addressing the issue (Meyer, 1990). Lastly, a score of 66 to 80 indicates a level of worry significant enough to require anxiety counseling and/or medication to lessen (Meyer, 1990).

According to Phillips (2016), there exists some inconsistencies when measuring the internal validity and consistency, with various studies showing statistical fluctuation running from a low of .66 to a maximum of .99. However, the average Cronbach's α equates to .89, indicating dependably reliable validity and consistency (Phillips, 2016). Example questions from the PSWQ are as follows, wherein clients/participants rate how accurately the following statements depict their daily or average experiences with worry, such as *My worries overwhelm me*: Not typical at all, 1; Rarely typical of me, 2; Somewhat typical of me, 3; Often typical of me, 4; Very typical of me, 5, and *I find it easy to dismiss worrisome thoughts*, with the inverse scoring of Not typical at all, 5; Rarely typical of me, 4; Somewhat typical of me, 3; Often typical of me, 2; or Very typical of me, 1.

Warwick-Edinburgh Mental Well-being Scale (WEMWBS)

The Warwick-Edinburgh Mental Well-being Scale measures the overarching sense of psychological well-being. The assessment uses a 5-point Likert scale format, with a point system ranging from one to five, wherein one signifies experiencing the statements "none of the time" and five indicates that life mirrors the statement "all of the time." Scoring techniques remain simple, as the scale taker adds up the total number of points selected during the assessment, wherein the higher the score, the higher overall sense of well-being is prescribed to the assessment taker. Per the research of Tennant et al. (2007), this inventory offers elevated internal consistency, with a typical Cronbach's alpha reaching a high score of 0.91. An example question from the WEMWBS is as follows, as clients/participants rate how

accurately the following statement depicts their general sense of mental and emotional wellness:

I've been feeling cheerful: None of the time, 1; Rarely, 2; Some of the time, 3; Often, 4; All of the time, 5.

Procedures

Upon IRB approval, the study advertisement followed a three-prong approach to participant gathering. First, posts containing information detailing the study were released on multiple social media services, particularly Facebook and Instagram. Secondly, in addition to being posted on the researcher's personal social media pages, the content was also formed into pre-made posts and distributed to several female military groups and to on-base yoga instructors to share on their social media accounts and in class, respectively, to bolster widespread dissemination. Thirdly, the researcher visited physical base locations to personally dispense flyers (see Appendix B) advertising the study. Lastly, information about the study was forwarded to the mental health clinics and on-base gyms on several military bases, both domestic and overseas, to engage in active population targeting. If interested, the aforementioned advertisements sent individuals to Qualtrics via hyperlinks for the social media posts and a scannable QR code for the flyers, wherein the study content laid, as Qualtrics housed a study purpose statement, consent form, and all research assessments. After clicking/scanning the links and codes, potential participants were first sent to the demographic survey that determined all pertinent inclusion/exclusion criteria, which, once passed, led into a consent form, with clickable consent options. Next, participants were guided through the series of therapeutic battery, which consisted of the GAD-7, WEMWBS, PSS, and PSWQ. In order to qualify for participation, potential participants were required to complete all four of the psychological surveys, starting with the GAD-7 and moving on to the WEMWBS, the PSWQ and the PSS, in this order, on Qualtrics. The final assessment the

clients took was an exit survey, detailing their opinions about the main beneficial component of their chosen workouts on managing anxiety, gathering information stored for future research rather than being used for this specific study. Following survey completion, the participants were directed to a page outlining the steps required to enter a raffle, which, as previously mentioned, served as an incentive for full participation completion. Lastly, at the end of the surveys, the participants found a debriefing document in Qualtrics that stated the purpose of the study, highlighting what the study was hoping to find, i.e., differences in anxiety, wellness, stress and worry between those who practice yoga, those who work out at a gym, and those who do not work out. This document included a statement directing those who have questions or are curious about the results of the research to contact the researcher via the provided email address.

Data Analysis

The cumulative responses of this survey research were analyzed with a one-way between subjects MANOVA. Per Kim (2017), the MANOVA analysis serves to statistically compare averages between more than two subsets, making this appropriate to analyze the three population groups. Lastly, a visual representation of changes were created, depicting this data via graph work, as the scores were superimposed onto a single chart to track differences, incorporating standard deviations and means.

Summary

In summation, to test the hypotheses that regular engagement in yoga practice will yield decreases in anxiety, stress, and worry and an increase in well-being among military women serving on active-duty, survey research gathered self-reported levels of these aforementioned variables. After canvasing military populations via social media and in-person advertisement, volunteer participants were sorted via random assignment into one of three potential subgroups, members of which all completed a psychological battery consisting

of the GAD-7, PSS, PSWQ, and WEMWBS. This subsequently gathered data underwent a MANOVA data analysis to then compare dependent variable statistics to determine the rejection or failure to reject the study's null hypotheses.

Chapter Four: Findings

Overview

Within this section, the statistical outcomes of this study's results are explored. To obtain these results, participants were gathered via social media and accessed/completed the study's associated surveys via Qualtrics. Following data collection, SPSS 29 served to analyze the derived statistical information through a multivariate analysis of variance, or MANOVA, analysis (Warne, 2019). Therefore, a summation of descriptive statistics starts this chapter, followed by the presentation of the data's characteristics for each hypothesis as identified through a series of varying assessments. Next, this chapter continues with a research findings, or results, section before ending with a summarized conclusion.

Descriptive Statistics

A total of 261 military personnel volunteered to take the survey panel connected to this research. However, that number was greatly reduced as a result of the volunteers' failure to meet all necessary inclusion and exclusion criteria. Specifically, 26 more participants were disqualified due to self-identifying as non-active-duty military members. One potential participant was similarly disqualified after self-reporting as not being born biologically female. Forty-four more participants who reported receiving a formal PTSD diagnosis by a medical professional and 33 participants who reported currently adhering to mental health medication were also disqualified on respective exclusion criteria. Seven more prospective participants were likewise deemed ineligible due to self-reported alcohol consumption above healthy limits. Furthermore, another 29 potential participants were disqualified due to a failure to answer all survey questions. Lastly, six participants either skipped the consent confirmation requirement or selected the do not consent option, which removed them from screening as well. Thus, a total of 115 participants met all predetermined inclusion/exclusion criteria and completed all the surveys in the assessment series. Of these 115 active-duty

military women, 45 participants self-identified as belonging to the gym workout group, whereas 38 participants self-sorted into the yoga group, leaving 32 participants reporting classification to the control group. Electronic dissemination of research advertising and survey access allowed for every branch to participate in this study, as the research outreach was not limited to a specific branch base, with most participants serving in the Air Force (see Figure 1). Moreover, enlisted military members accounted for a slight majority over commissioned, or officer, participants at 58% and 42%, respectively (see Figure 2). Lastly, the median age of qualified participants fell within the 25-34 year age range, with the interquartile range (IQR) spanning from the "25-34" age range to the "35-44" age range (see Figure 3).

Figure 1

Participant Branches of Service

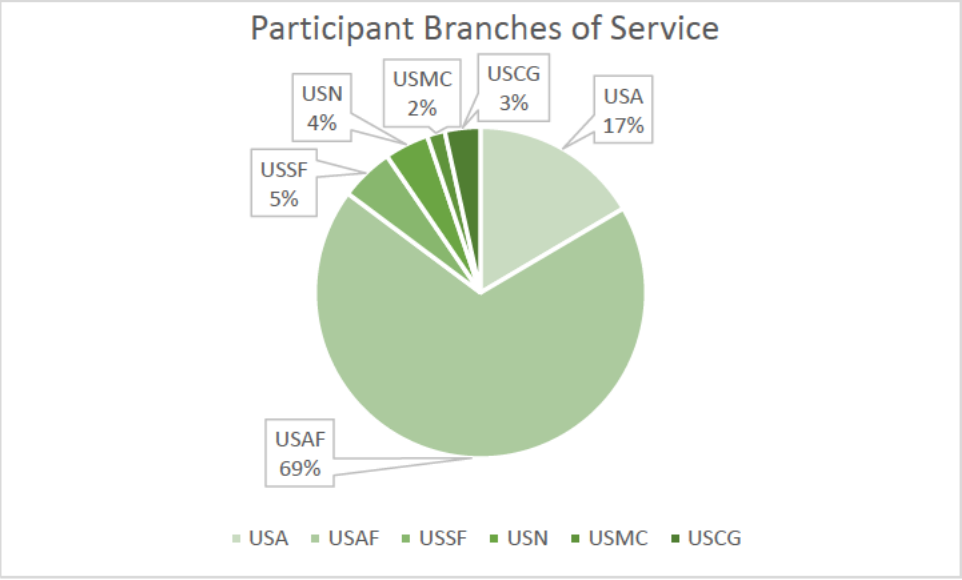


Figure 2

Participant Ranks

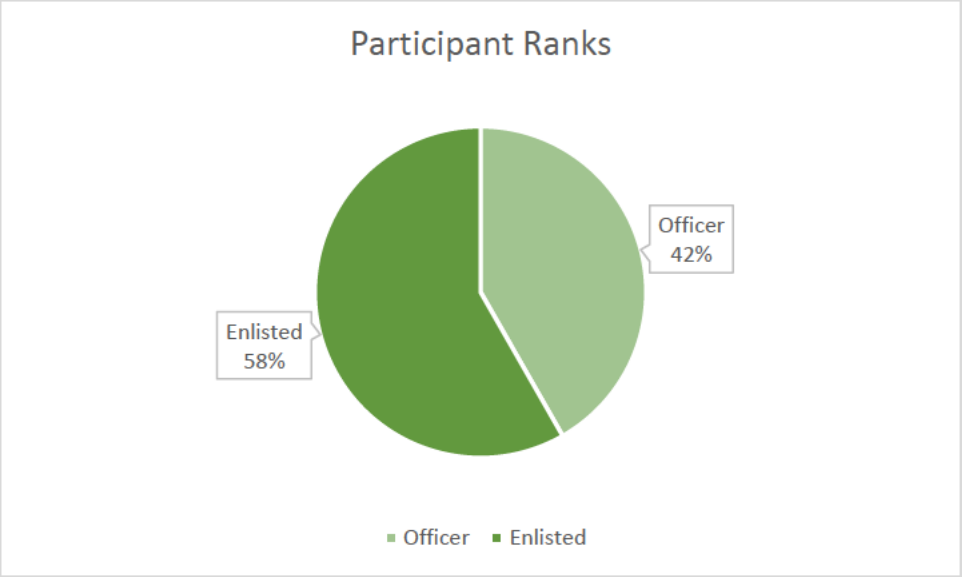
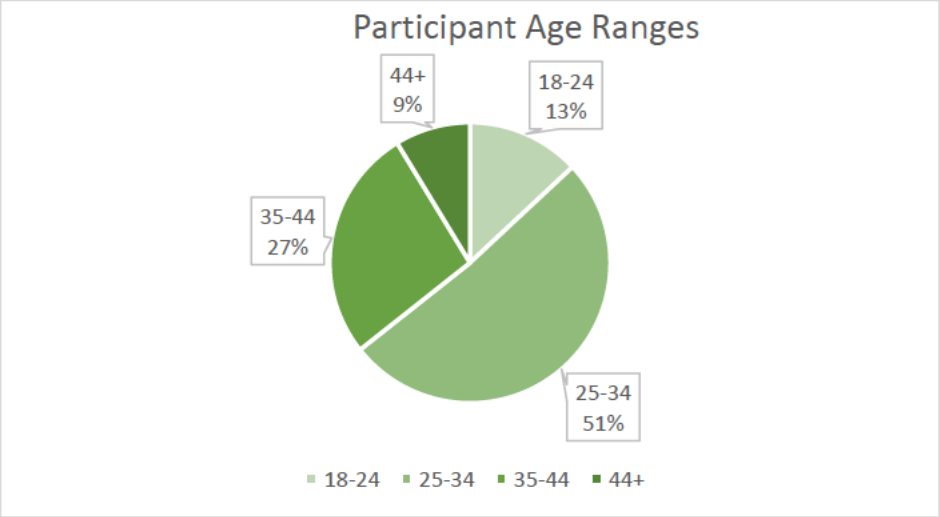


Figure 3

Participant Age Ranges



Results

As previously stated, this research sought to identify whether yoga, gym-based workouts, or not consistently working out yielded lowered presentations of generalized

anxiety among women serving in the Armed Forces. To accomplish this goal, four dependent variables shaped four connected research hypotheses.

Hypotheses

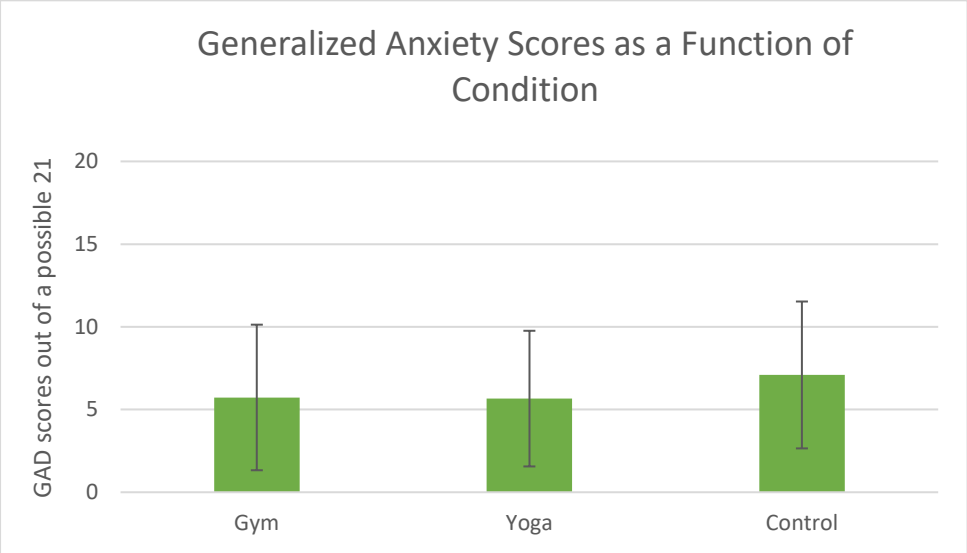
Fail to Reject the Null Hypothesis

Ha1: Active-duty military women who practice yoga experience significantly less anxiety than military women who work out at a gym and military women who do not routinely work out.

According to data analysis, a complex contrast between subgroups comparing the mean GAD scores of the control group (M = 7.09) to both exercise subgroups combined (M = 5.70) showed a mean difference of -1.40. Moreover, GAD scores between the gym (M = 5.73, SD = 4.40) and yoga groups (M = 5.66, SD = 4.10) revealed a mean difference of -0.08, indicating less reported anxiety among participants in the yoga subgroup (see Figure 4). However, the difference between these two groups does not reach a high enough threshold to be considered statistically significant, wherein $F(2, 112) = 1.21$, $p = .302$, $\eta_p^2 = .02$. Thus, the complex contrast between the mean GAD scores of the control group compared to the exercise groups (yoga and gym) showed that the difference was not statistically significant with 95% CI [-3.18, 0.38], $p = .123$. Moreover, GAD scores were also not statistically significantly different between the gym and yoga groups, with 95% CI [-1.96, 1.81], $p = .937$.

Figure 4

GAD-7 Score Results



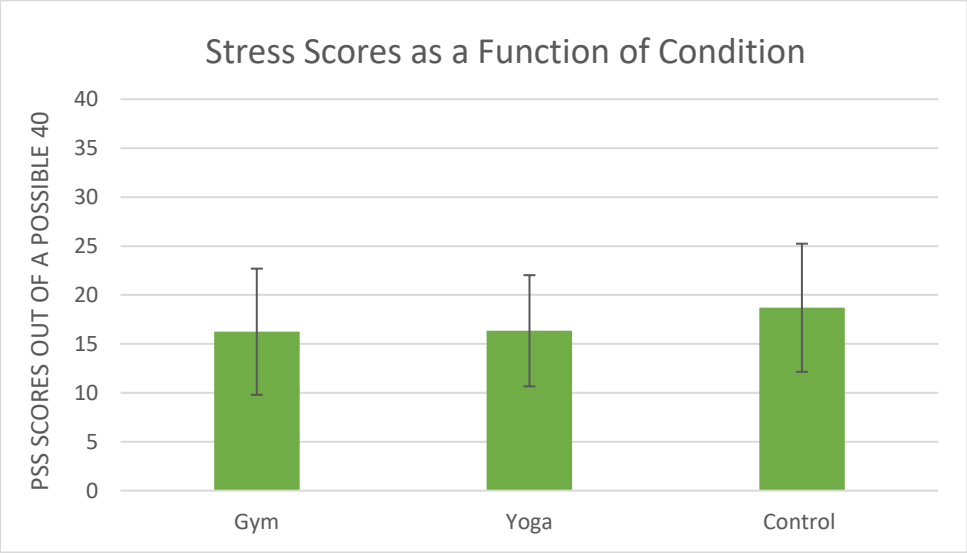
Fail to Reject the Null Hypothesis

Ha2: Active-duty military women who practice yoga experience significantly less stress than military women who work out at a gym and military women who do not routinely work out.

Ultimately, this study's data revealed that the PSS scores were not statistically significant. While there was also a difference in scoring for this particular assessment as well, for results indicated less stress, among those who routinely engage in gym workouts (M = 16.24, SD = 6.45) than those associated with the yoga group (M = 16.34, SD = 5.68) and the control group (M = 18.69, SD = 6.55), as $F(2, 112) = 1.71$, $p = .185$, $\eta_p^2 = .03$ (see Figure 5), this difference was not significantly significant.

Figure 5

PSS Score Results



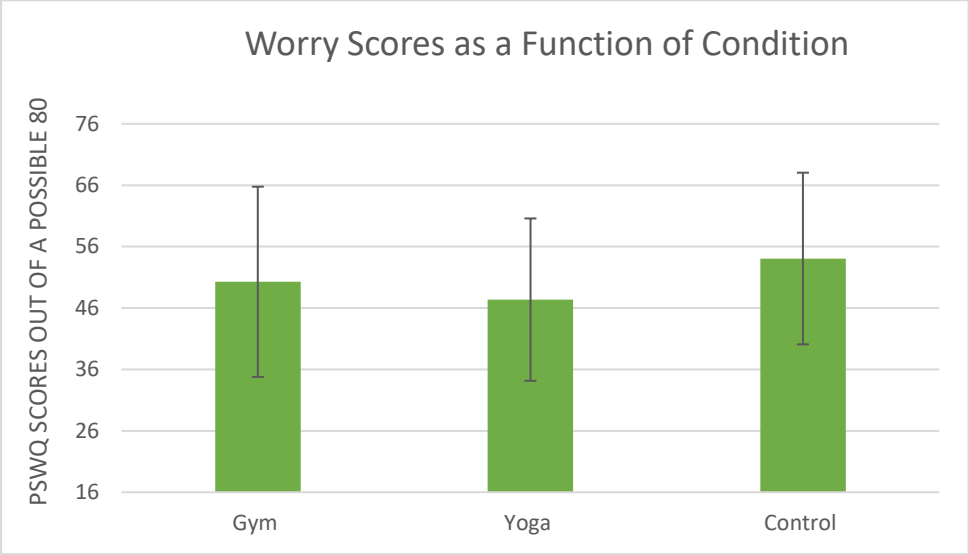
Fail to Reject the Null Hypothesis

Ha3: Active-duty military women who practice yoga experience significantly less worry than military women who work out at a gym and military women who do not routinely work out.

The results for the final assessment showed that PSWQ scores were similarly not statistically significant. Overall, data revealed lower levels of worry among those who practiced yoga (M = 47.37, SD = 13.22) than those in the control group (M = 54.06, SD = 13.98), with a mean difference of -6.69. Furthermore, the gym group evidenced even lower scores than the yoga group (M = 50.27, 15.49), showing a mean difference of -2.9. However, despite either of these differences, the between groups variance was again not large enough, rendering these findings statistically insignificant, for $F(2, 112) = 1.89$, $p = .156$, $\eta_p^2 = .03$ (see Figure 6).

Figure 6

PSWQ Score Results



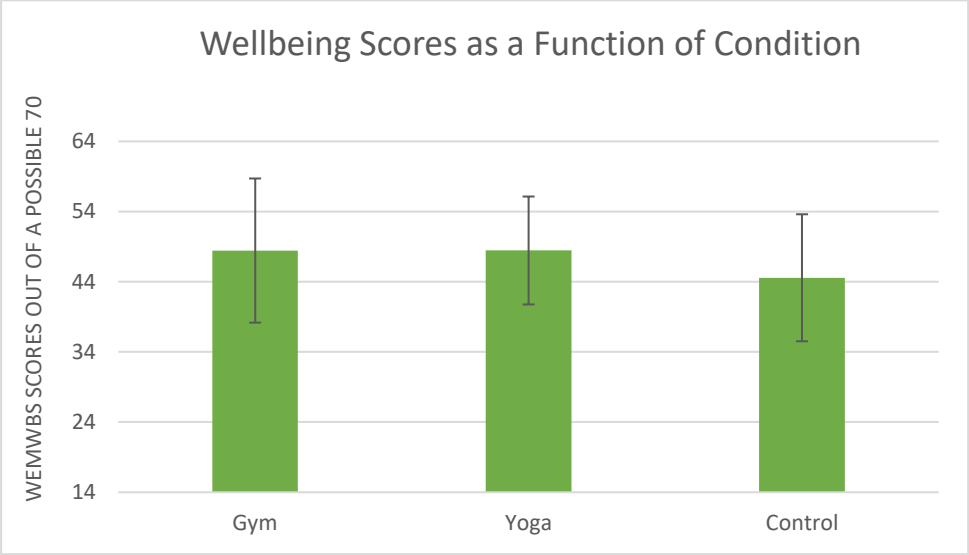
Fail to Reject the Null Hypothesis

Ha4: Active-duty military women who practice yoga experience significantly greater well-being than military women who work out at a gym and military women who do not routinely work out.

Similarly to the PSS, the results for the Warwick-Edinburgh Mental Wellbeing Scale showed a repeated lack of statistical significance. In analyzing the data, participants who work out at a gym reported higher scores, indicating better reported mental wellness, (M = 48.44, SD = 10.27) than participants in the yoga group (M = 48.45, SD = 7.67). Both exercise groups evidenced higher scores than the control group (M = 44.56, SD = 9.05), with the yoga group showcasing a mean difference of -3.89 from the control group (see Figure 7). Ultimately, however, though the yoga subgroup did report higher levels of well-being than the control group, the difference was not statistically significant, with $F(2,112) = 2.08$, p = .129, $\eta_p^2 = .04$

Figure 7

WEMWBS Score Results



Summary

The main goal of this research sought to examine the impact of yoga on reducing non-traumatic anxiety among female military members when compared to the impact of working out at a gym or not working out consistently. This specific probe arises from the larger question regarding the effectiveness of different fitness measures as alternative methods to treat various challenges to psychological wellness, such as, in this case, generalized anxiety. This study employed a MANOVA analysis to evaluate the impact of fitness type (yoga, gym workouts, and no habitual fitness participation) on a gamut of dependent variables connected to anxiety and anxious traits. In conclusion, the alternate hypothesis derived from this study's research questions based on generalized anxiety as a whole states that practicing yoga weekly in a community setting will reduce anxiety among female military members at a clinically significant rate than those who exclusively do gym workouts or who do not work out routinely. Ultimately, when specifically examining generalized anxiety, the data analysis revealed that the differences between exercise type, including yoga practice, and subsequent

self-reported anxiety on the combined dependent variables were not statistically significant, $F(2, 112) = 0.81$, $p = .591$; Pillai's Trace = .058. Thus, the data fails to reject the null hypotheses stating that participants who practice yoga will yield significantly reduced anxiety and anxious traits when compared to participants who work out at a gym and participants who do not regularly work out.

Chapter Five: Findings

Overview

Statistics from a collection of surveys were gathered to determine if routine yoga practice decreases generalized anxiety, stress, and worry while simultaneously increasing well-being more than routinely working out at a gym or not habitually working out for women serving in the military. This chapter discusses subsequent data implications, research limitations, and recommendations for future research based on this study's results.

Discussion

The purpose of this research was to investigate habitual yoga practice's impact on military women's generalized anxiety levels in comparison to the anxiety levels of women who regularly participate in gym workouts and of women who do not exercise regularly. This study specifically evaluated four contributing psychological components of generalized anxiety, including anxiety itself, stress, worry, and low sense of well-being, to ascertain if the use of yoga as an alternative therapy treatment can produce clinically significant improvements in mental health when compared to other exercises. Previous research has indicated that, in general, regularly practicing yoga directly contributes to lower reported levels of anxiety, while also specifically increasing overall well-being when compared to the well-being of individuals who routinely engage in other forms of gym-based exercise (Nafees & Nazam, 2017). To correspond to the four examined components of generalized anxiety, the study asked four questions to test these hypotheses.

RQ1: Is there a significant difference in anxiety between participants who routinely practice yoga, those who engage in gym-based workouts, and those who do not regularly work out?

RQ2: Is there a significant difference in stress levels between participants who routinely practice yoga, those who engage in gym-based workouts, and those who do not regularly work out?

RQ3: Is there a significant difference in the amount of worry between participants who routinely practice yoga, those who engage in gym-based workouts, and those who do not regularly work out?

RQ4: Is there a significant difference in overall mental well-being between participants who routinely practice yoga, those who engage in gym-based workouts, and those who do not regularly work out?

Research Question 1 (RQ1)

The first research question asked if military women practicing yoga experience decreased anxiety levels than military women who work out at the gym and military women who do not usually work out in any capacity. According to Chand and Marwaha (2023), generalized anxiety is characterized by routine forward thinking that projects fear and distress onto future outcomes due to a sense of anticipated threat, whether actual or imagined, to one's security, safety, and/or stability. While classified as a state of psychological distress, generalized anxiety affects every area of wellness, destabilizing mental, emotional, social, and somatic well-being through a series of negative effects and symptoms (Chand & Marwaha, 2023). Although anxiety can and often does center exclusively on a specific and, therefore, limited concerns, such as with social anxiety, generalized anxiety can span areas of functionality, causing fear regarding non-threatening situations, environments, and events (Munir & Takov, 2022). Generalized anxiety as an official diagnosis insinuates the presence of anxiety that persists to a chronic level, consistently manifesting for a period of six months or longer, with an accompanying marked challenge with controlling fear thoughts and subsequent actions (Munir & Takov, 2022). Importantly to this study, unlike PTSD, per Munir and Takov (2022), a diagnosis of generalized anxiety disorder does not need to be preceded by a previous threat to life and can result from ordinary life experiences and stressors feeling overwhelming or unmanageable.

To investigate varying levels of anxiety among the three population groups to compare anxiety and answer the first RQ, this study's participants self-administered the GAD-7, wherein participants answered seven questions that rated their perceived severity and frequency level for expressed anxiety symptoms (Johnson et al., 2019). For this assessment, scores and anxiety levels positively correlate, as lower scores indicate lower anxiety levels, and conversely, higher scores indicate the existence of more intense anxiety levels. A GAD-7 score that rates anxiety over ten points remains clinically significant, i.e., high enough to be considered diagnosable anxiety (Johnson et al., 2019). In this study, while participants who practice yoga did show lower anxiety levels than both participants who work out at the gym and participants who do not regularly work out, the difference in scoring results were not statistically significant. Interestingly, the average final scores for all three groups were significantly lower than the ten points needed for anxiety to be classified as diagnosable. These reduced rates could be due to the cultivated environment of resiliency the military actively seeks to instill in service members. In connection to this revelation, the research of Anderson and Shivakumar (2013) discovered equivalent levels of benefit stemming from exercise and the use of non-physically based coping strategies. Acknowledging and leaning into the body's natural call for relaxation and/or slowing down in pace may also lead to decreased anxiety, thus, potentially leading to similar levels of anxiety reduction between mind-centered coping skills (such as challenging anxious thoughts, considering alternatives, and reliance on social supports), yoga practice, and gym workouts (Anderson & Shivakumar, 2013).

Research Question 2 (RQ2)

Looking beyond anxiety as a whole and evaluating the presence and impact of symptoms of or accelerants for generalized anxiety, the second research question asked if military women practicing yoga experience decreased stress levels than military women who

work out at the gym and military women who do not usually work out in any capacity. Per Schneiderman (2005), stress is the body's somatic and emotional response to external pressure and/or perceived risks to maintaining physiological and psychological equilibrium, normalcy, and comfort. Modern case studies, such as the one conducted by Daviu et al. (2019), have revealed a significant relationship between stress and anxiety, as the researchers discovered cognitive overlaps between the two, wherein anxiety and stress utilize the same areas of the brain to process both normative emotional response levels (the "hypothalamus, amygdala, pre-frontal cortex, and nuclei of the brainstem") and unhealthy, diagnosable levels ("the basolateral amygdala, medial prefrontal cortex, locus coeruleus, and the nucleus accumbens") of anxiety and stress (p. 2). Furthermore, per Konstantopoulou et al. (2020), chronic, untreated, or highly elevated stress can exacerbate anxiety and can even accelerate anxious mood to a disordered level. Conversely, evidence also states that identifying and treating stress at early onset can prevent the development of clinically significant anxiety (Konstantopoulou et al., 2020).

To determine the impact of exercise routine on stress levels for military women and, in doing so, answer the second RQ, participants in this study took the PSS, during which the participants responded to 10 questions that quantified the amount of stress participants generally feel throughout everyday existence (Townsend & Medvedev, 2022). Similarly to the GAD-7, scores and stress levels likewise positively correlate, as lower scores indicate lower experienced levels of stress, and on the contrary, more elevated scores indicate habitually elevated stress (Townsend & Medvedev, 2022). Per Townsend and Medvedev (2022), PSS score ranges fall into one of three classifications, wherein results from 0 to 13 attest to the presence of "low" stress, with results spanning from 14 to 26 indicating the existence of "moderate" stress, and results running from 27 to 40 signifying the prevalence of "high," or concerning, levels of stress (p. 5). In this study, while participants who practice

yoga did showcase lower stress levels than participants who do not regularly work out, participants who engage in gym workouts yielded the lowest self-reported stress levels of the three groups. However, like anxiety as determined by the GAD-7, the differences in PSS scoring results between the gym, yoga, and control groups were not statistically significant. Interestingly, the average final scores for all three groups all fell within the lower end of moderate stress, with a sizable buffer between reported median scores and clinically high stress scores. While studies prove yoga's ability to improve focus on the here-and-now, Tong et al. (2021) found that this mindfulness only forecasts potentially lowered stress levels, rather than inherently or automatically lowering stress levels. Conversely, per the University of California (2016) heightened activation of "glutamate and gamma-aminobutyric acid" has been scientifically linked to lowering anxiety, wherein the highest activation of these neurotransmitters comes from "intense exercise," such as gym workouts, which hold a higher natural intensity and aerobic component than yoga holds (para. 1).

Research Question 3 (RQ3)

Continuing to analyze anxious traits and accelerants, the third research question asked if military women practicing yoga experience decreased worry levels than military women who work out at the gym and military women who do not usually work out in any capacity. Per Hirsch and Mathews (2012), the primary distinctions between anxiety and worry rest in worry's core of negative narrative cycles and internal dialogue spirals, as well as the shorter lifespan of worry, which eradicates when unknowns become known. Furthermore, recent research by Newman et al. (2013) linked worry and failure to address worry through challenges or confrontation of worried thoughts directly leading to rises in anxious mood. Moreover, far from terminating during times of rest, unless directly challenged, the mental and emotional side effects of worry persist even in sleep, reducing the ability for both psychological and physiological rejuvenation and recalibration during slumber, which can in

turn increase worry experienced throughout normative life while undergoing average activities (Newman et al., 2013). According to Starcevic et al. (2007), persistent worry can perpetuate anxiety to a disordered level when unchallenged and unmanaged. Worry also exists as a subcomponent or trait of diagnosable generalized anxiety, as the American Psychiatric Association (2013) lists the presence of worry as a necessary criterion for GAD diagnostics, further enmeshing the co-occurrence and interconnection of these two psychological components.

To determine the impact of exercise routine on worry levels for military women and, in doing so, answer the third RQ, participants in this study self-administered the PSWQ, during which the participants responded to 16 questions that quantified the intensity of worry participants generally felt (Puccinelli et al., 2023). Per Puccinelli et al. (2023), like the previous two assessments, the PSWQ scores follow a positive correlation as well, wherein higher scores equate to more intensely experienced worry. Specifically, according to Vissink et al. (2021), scores spanning from six to 39 indicate "low worry," whereas scores spanning from 40 to 59 indicate "moderate worry," and scores spanning from 60 to 80 indicate "high worry." (p. 3). In this study, the results of the PSWQ followed trends from the prior two assessments, as, while the yoga subgroup reported lower experienced worry than the control group, the subgroup with the lowest self-reported worry levels was the gym workout group. Additionally, similarly to the previous assessment analyses, the differences in PSQW scoring results between the gym, yoga, and control groups were also not statistically significant. The average final scores for all three groups all fell within the higher end of moderate stress, making worry the predominantly experienced trait between anxiety, stress, and worry for this particular population. These worry results are supported by the research of Gordon et al. (2020), which revealed a specific and unique link between resistance-based exercise that naturally occurs when utilizing gym machines and equipment and decreased worry.

Research Question 4 (RQ4)

Lastly, the fourth research question asked if military women practicing yoga experience increased psychological well-being than military women who work out at the gym and military women who do not usually work out in any capacity. Per Jarden and Roache (2023), well-being refers to the sense of fulfillment and needs meeting within a person's life, specifically analyzing one's sense of general physical, mental, and emotional health and security. Thus, a high sense of well-being would indicate unimpaired internal and interpersonal functionality with predominately positive or at least balanced thoughts, feelings, and actions (Jarden & Roache, 2023). In contrast to the other dependent variables, the classification of well-being rests predominately in the individual's self-perception rather than in externally measurable symptoms or indicators (Jarden & Roache, 2023). It can, therefore, be reasoned that higher well-being can serve as a resilient preemptive deterrent to the growth of anxiety or the diagnosis of GAD. For example, unlike the other dependent variables, which were all positively correlated, well-being and anxiety are opposingly connected, wherein increased well-being statistically equates to decreased anxiety, with well-being seemingly acting as a preventative to anxiety (Malone & Wachholtz, 2018).

To determine the impact of exercise routine on self-esteem levels for military women and, in doing so, answer the fourth RQ, participants in this study self-administered the WEMWBS, during which the participants responded to 14 questions that rated the level of life acceptance and self-satisfaction, as evidenced by happiness and internal peace, participants generally feel (Marmara et al., 2022). Without the use of predetermined score range classification, WEMWBS results are less structured, wherein larger scores indicate a bigger sense of well-being, whereas, inversely, lower scores indicate lower reported well-being (Tennant et al., 2007). Following the now well-established pattern for this study, while yoga group participants reported higher well-being than those in the control group, i.e., the

group of participants who do not routinely work out, the gym subgroup reported the highest well-being ratings of the three groups. However, the differences in WEMWBS scoring results between the gym, yoga, and control groups were yet again not statistically significant, further evidenced by the fact that the gym and yoga groups' mean scores showcase a difference of a mere .01 points. Interestingly, the average scores for all three participant groups fell within a slightly upper-middle or moderate range. Regarding the higher evidenced well-being scores reported by the gym group, however, Iwon et al. (2021) found that gym-based workouts have a more enduring benefice, wherein elevated positive life outlooks and perceived sense of psychological wellness last well after the actual workout has ended.

Implications

Professional codes of ethics require licensed therapists and social workers to remain current in best treatment practices based on recurring client needs (Drisko, 2021). In this modern age, research argues for anxiety studies and alternative treatment options to hold space as a top client need in therapists' practices, particularly in practices associated with military populations. According to Russell et al. (2022), within the past two decades, anxiety disorder diagnoses have continued to rise exponentially throughout the ranks among both commissioned and enlisted active-duty service members. Recent research also revealed that GAD is the most frequent disorder classification assigned to military members by mental health professionals, with a higher diagnosis rate than PTSD (Russell et al., 2022) Additionally, as a defined component of therapy, there should be a collaborative aspect of treatment planning, which takes into account client preferences for treatment methods (Drisko, 2021). Again, the research reveals marked interest in unconventional mental health treatments as opposed to traditional talk therapy compliance, as studies showed that active-duty servicemembers prefer and are, therefore, more likely to stay consistent with alternative anxiety treatment (Davis et al., 2014).

Moreover, as touched on in the previous chapter, the gym and yoga groups not only reported the best, though still not significant, mental health outcomes, but the results from these two groups remained consistently under the threshold of concern for diagnosable or pathological levels of anxiety and anxious traits. Research irrefutably proves the benefits of routine exercise, as exercise serves as a primary component of the wellness dimension defined as physical wellness (Zohair et al., 2020). Within that scope, studies have consistently proven health benefits specifically derived from working out, including the reduction of physiological conditions and disorders (Trajković et al., 2023). However, Trajković et al. (2023) additionally found that physical health benefits actively bled onto other areas of wellness, bringing more positive outcomes in those areas as well. Specifically, physical exercise has been linked to stability and impact increases in interpersonal interactions, confidence, and sense of self, as well as improvements in cranial/cerebral operation and mental and emotional coping and processing abilities (Trajković et al., 2023). Trajković et al. (2023) further identified the price variance as an additional draw to use working out as a form of alternative mental health treatment, as participation in gym workouts typically costs significantly less than attending therapy sessions. Per Barrett et al. (2008), one of the greatest predictors of attrition for psychotherapy attendance rests in counseling costs and evidenced or perceived inability to pay for extended services. Military members seeking alternative treatments and/or methods to proactively mitigate mental health challenges can access the base gym free of charge, wherein this study's service type (on active duty) has priority of entrance and extended hours of operation at their disposal, further likening the propensity to use the gym as a psychological tool due to its ease and convenience. Thus, due to all of these statistically significant and verified benefits, the implications of this study highlight the importance of advocating for traditional forms of exercise over mindfulness-heavy workouts like yoga.

The secular nature of this study focused on physical rather than spiritual wellness as an effective alternative treatment for anxiety. However, the theory and findings can be related to Biblical principles. To begin, I Timothy 4:8 supports the concept of gleaning benefits from exercise in life, as the verse affirms the inherent, universally accepted benefits of working out, stating that "bodily training is of some value." The Bible also creates a connection between living an ideal life in alignment with the Lord's wishes for women specifically and working out through the inclusion of fitness in the description of the Proverbs 31 woman (Jansen, 2020). Included in this description, Proverbs 31:17 puts forth that a well-adjusted, healthy woman "dresses herself with strength and makes her arms strong," a trait that comes specifically through the intentionality of physical exertion. Further evidence of the benefits of exercise can be found in I Corinthians 9:25, which declares that "every athlete exercises self-control in all things." By its total inclusivity, this same self-control would extend to the management and challenging of anxious thoughts and the inherent motivation to engage with appropriate coping mechanisms even when difficult. Lastly, Scripture can be interpreted to support the overarching premise of using exercise as an alternative treatment. Hebrews 12:12-13 commands Christian believers to "lift [their] drooping hands and strength [their] weak knees," so that "what is lame may not be put out of joint but rather healed." In these verses, the Bible draws parallels to the interconnectivity of whole person wellness, indicating that strength of physical proportions can take areas of weakness, including mental and emotional dysregulation, and, by practicing dedication and consistency, can restore a psychologically downcast believer.

Limitations

While preparation for this research attempted to mitigate limitations, both internal and external validity limitations inevitably arose during the study. This section will address those limitations, which include a low sample number, uneven sample size, and the population's

self-assessments. To begin, as discussed in the previous chapter, 261 military members volunteered to participate in this study. However, more than half of the original volunteers (146) were disqualified due to exclusion criteria elimination. Thus, the first limitation rests in the fact that MANOVA analyses are famously number/data-hungry (Spicer, 2005). Per Nayak (2010), using a reduced sampling risks not accurately reflecting the true gap of variance between study subgroups, which often causes inaccurate assumptions, wherein the researcher will, based on the data at hand, fail to reject the null hypothesis. As the gym and yoga groups reported such close numbers, wherein the gym subgroup scored just minorly better (i.e., evidenced less anxiety and anxious symptoms) than those in the yoga subgroup, there exists the possibility that using a small sample size could have caused a type II error to develop within the study (Banerjee et al., 2009).

Similarly, using uneven sample sizes could potentially also pose a threat to this study's inherent validity. While modern researchers are divided on whether size inequality in samples or subgroups negatively affects outcomes, the research of Yoon and Lai (2018) found that, in order to develop a statistical error, a study's subgroups must be radically unbalanced. Within this study, the size difference ranges were mild, with the largest discrepancy existing between the gym workout group and the control group, with a difference of 13 participants in the sample sizes. The yoga group also had seven fewer participants than the gym group, which again, was the group reporting the best mental health outcomes and five more participants than the control group. However, when the number of study participants is moderately small, differences in subgroup sizes become more impactful and riskier in terms of creating both type I and type II errors (Yoon & Lai, 2018).

Next, the use of self-assessments can negatively impact research validity. Per Born and Frank (2022), there is often a discrepancy between how survey takers would ideally like to present to external forces and/or outside observers versus how they feel internally. When

this discrepancy exists, survey populations tend to answer either a) how they want to feel/think or b) how they believe the researchers want the participants to answer (Born & Frank, 2022). Moreover, this discrepancy may occur subconsciously, for the research of Cascio et al. (2015) found that individuals find psychological comfort in believing the best of themselves and perpetuate that idealized narrative of themselves in self-assessment. This self-preserving mindset leads people to view themselves as healthier and/or more emotionally and mentally stable than other participants, creating a false higher estimation of their actual abilities to cope and persevere amid psychological adversity, which naturally skews reporting during self-assessments (Dunning et al., 2004). This concept is additionally compounded in this study specifically due to the military's disinclination to report mental health challenges and struggles (Sharp, 2015). Therefore, the data, which evidenced relatively low levels of anxiety, stress, and worry, may not be accurately reported.

Recommendations for Future Research

In the aftermath of conducting this research and with the wisdom and vision of hindsight, three main recommendations for future research became apparent. To begin, as mentioned earlier, participants' assessment scores for this study were almost entirely indicative of clinically and significantly low anxiety levels. While the research consent form clearly stated that "to participate, you must be an American female military member on active duty that experiences mild to moderate levels of stress or anxiety," the majority of participants reported anxiety and anxious traits were so mild that they were technically not diagnosable as disordered levels generalized anxiety. While the study intended to explore the impact of exercise type on self-reported sensations and experiences of anxiety rather than on diagnosed disorders, in the future, to more accurately determine the effectiveness of exercise type on anxiety for women in the military, it may be more beneficial to pull participants from a more specific sample, i.e., women on active duty who have been diagnosed with GAD.

Secondly, in connection with the aforementioned potential research suggestion, future studies would likewise benefit from incorporating both increased randomization and test-retest experimentation inclusions in several ways. First, new research would ideally gather participants who a) experience diagnosable anxiety levels and b) do not work out at all and divide them into three subgroups via random assignment. These groups would take the study's surveys at the beginning, middle, and end of the research cycle, with the gym and yoga groups actively engaging in the assigned exercise throughout the study. This design would eliminate the risk of pre-existing factors, such as an already well-established mental and emotional resiliency from past cultivation of a positive relationship with exercise, impacting anxiety scores. Moreover, to add onto this concept, future research would additionally benefit from creating a study that incorporates yoga practice into the lives of participants who already work out at a gym and/or attend therapy in order to observe the benefits specifically derived from yoga practice as a supplemental addition to daily life. Lastly, since this study did reveal that exercise, regardless of type, does yield more positive (though not significantly more positive) mental health outcomes, such as reduced anxiety and increased overall wellness, than not working out, more investigation into exercise as a viable alternative treatment should be conducted. This principle would best be served by including a fourth subgroup that does not engage in any type of fitness but, instead, attends counseling for the duration of the study.

Finally, future research opportunities naturally stem from the qualitative questions asked during this research. Regarding the exit survey, research analyzing the benefits of practicing yoga and working out could be conducted in a manner that explores those specific benefits and the theoretically supportive reasoning resulting in those benefits. Furthermore, research that centers on psychoeducation between the differences in anxiety, stress, and

worry could shine light on the reason that participants reported significantly higher levels of anxiety than their diagnostic assessments showed.

Summary

Current streams of research involving yoga hint at efficacy with the use of yoga to treat generalized anxiety (Simon et al, 2021). However, while this research did show a connection between routine yoga practice and an inclination towards positive mental health outcomes, this study's results revealed that yoga was not as efficacious as working out at a gym for reducing anxiety, stress, and worry and increasing general wellness among military women. Specifically, within this research, the variance in data between the yoga subgroup and the gym subgroup in regard to the ability to reduce anxiety and anxious symptoms was not significant enough to be statistically relevant ($F(2, 112) = 0.81$, $p = .591$; Pillai's Trace = .058). Moreover, there was also simply not enough difference in reported scores between the control group and either of the exercise groups to advocate for exercise to be used as an alternative treatment for anxiety. Thus, the overarching conclusion stemming from this study is that, while consistency with physical fitness, regardless of selected type, does offer some slight potential benefit in reducing anxiety, there does not exist enough empirical support in this study to say that yoga is the most effective coping mechanism or alternative treatment for anxiety and anxious symptoms in terms of exercise for women in the military.

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Appendix A

Informed Consent

Title of the Project: An Exploration into the Effects of Yoga on Reducing Anxiety in Female Military Personnel
Principal Investigator: Aubrey Berry, [redacted], Liberty University
Co-investigator: Jeremiah Sullins, [redacted], Liberty University

Invitation to be Part of a Research Study

You are invited to participate in a research study. To participate, you must be an American female military member on active duty that experiences mild to moderate levels of stress or anxiety. This study is open to women that will participate in one of three groups–one group being female servicemembers who practice yoga at least three times a week, one group being female servicemembers who work out at a gym, either a public gym or a home gym, and one group being female servicemembers who do not work out.

Please take time to read this entire form and ask questions before deciding whether to take part in this research.

What is the study about and why is it being done?

The purpose of the study is to investigate the effectiveness of yoga to reduce prevent anxiety in female military members. The study will explore any significant differences in anxiety, well-being, stress, and worry in female military members who routinely practice yoga compared to those who participate in gym-based workouts and those in the control group who do not engage in any type of regular work outs.

What will happen if you take part in this study?

If you agree to be in this study, I will ask you to do the following:

1. Complete a demographic survey (5 minutes).
2. Complete four data collection surveys online with the provided secure link: Generalized Anxiety Disorder Scale-7, the Warwick-Edinburgh Mental Well-being Scale, the Perceived Stress Scale, and the Penn State Worry Questionnaire. It should take approximately 15 minutes to complete all the surveys.
3. Complete an exit survey (2 minutes).

How could you or others benefit from this study?

Participants should not expect to receive a direct benefit from taking part in this study. Benefits to society include an increased awareness in the potential benefits of yoga for females in the military to prevent stress from becoming generalized anxiety and information to inform military-sponsored fitness and wellness programs.

What risks might you experience from being in this study?

The expected risks from participating in this study are minimal, which means they are equal to the risks you would encounter in everyday life.

How will personal information be protected?

The records of this study will be kept private. Published reports will not include any information that will make it possible to identify a subject. Research records will be stored securely, and only the researcher will have access to the records.

- Responses to the online surveys will be anonymous.
- Data will be stored on a password-locked computer. After seven years, all electronic records will be deleted.

How will you be compensated for being part of the study?

Participants will be compensated for participating in this study. Six $25 Amazon gift cards will be raffled within each group when the number desired for the study has been reached.

All participants will be asked to email me once they complete all surveys so they can be entered into the raffle.

Is the researcher in a position of authority over participants, or does the researcher have a financial conflict of interest?

The researcher [redacted] at Liberty University. To limit potential or perceived conflicts, the study will be anonymous, so the researcher will not know who participated nor will the volunteers have any contact with other participants. Should volunteers choose to disclose their participation in the study, it is at their own admission.

This disclosure is made so that you can decide if this relationship will affect your willingness to participate in this study. No action will be taken against an individual based on his or her decision to participate or not participate in this study.

Is study participation voluntary?

Participation in this study is voluntary. Your decision whether to participate will not affect your current or future relations with Liberty University or the military. If you decide to participate, you are free to not answer any question or withdraw at any time prior to submitting the surveys without affecting those relationships.

What should you do if you decide to withdraw from the study?

If you choose to withdraw from the study, please exit the survey and close your internet browser. Your responses will not be recorded or included in the study.

Whom do you contact if you have questions or concerns about the study?

The researcher conducting this study is Aubrey Berry, [redacted]. You may ask any questions you have now. If you have questions later, **you are encouraged** to contact her at [redacted]. You may also contact the researcher's faculty sponsor, Dr. Jeremiah Sullins, at [redacted].

Whom do you contact if you have questions about your rights as a research participant?

If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher, **you are encouraged** to contact the IRB. Our physical address is [redacted]; our phone number is [redacted], and our email address is [redacted].

Disclaimer: The Institutional Review Board (IRB) is tasked with ensuring that human subjects research will be conducted in an ethical manner as defined and required by federal regulations. The topics covered and viewpoints expressed or alluded to by student and faculty researchers are those of the researchers and do not necessarily reflect the official policies or positions of Liberty University.

Your Consent

Before agreeing to be part of the research, please be sure that you understand what the study is about. You can print a copy of this document for your records. If you have any questions about the study later, you can contact the Aubrey Berry using the information provided above.

I have read and understood the above information. I have asked any questions that I have had and have received answers. I consent to participate in the study.

_____

Printed Subject Name

_____

Signature & Date

Appendix B

Recruitment Flyer

Research Participants Needed

An Exploration into the Effects of Yoga on Anxiety in Female Military Personnel

- Are you an active-duty female?
- Are you an American citizen?
- Do you experience mild to moderate routine stress and anxiety?

If you answered **yes** to each of the questions listed above, you may be eligible to participate in a research study.

This study is open to women that will participate in one of three groups–one group being female servicemembers who practice yoga at least three times a week, one group being female servicemembers who work out at a gym at least three times a week, either a public gym or a home gym, and one group being female servicemembers who do not work out.

The purpose of this research study is to explore the comparative effects of yoga vs. working out at a gym on the presence of anxiety for female military members. The study will explore any significant differences in anxiety, well-being, stress, and worry in female military members who routinely practice yoga compared to those who participate in gym-based workouts and those in the control group who do not engage in any type of regular workouts.

Participants will be asked to complete a screening and demographic survey, the Generalized Anxiety Disorder Scale (GAD-7), the Warwick-Edinburgh Mental Well-being Scale (WEMWBS), the Penn State Worry Questionnaire (PSWQ), the Perceived Stress Scale (PSS), and an exit survey. It may take an average of 15 minutes to complete the surveys.

After taking all surveys, participants can elect to be entered into a raffle for one of six $25 Amazon gift cards when the surveys close.

If you would like to participate, scan this QR code and complete the screening survey.

[redacted]

A consent document is provided as the first page after you complete the screening survey.
Aubrey Berry, a doctoral candidate in the Department of Community Care and Counseling, Liberty University, is conducting this study.
Please contact Aubrey Berry at [redacted] for more information.

Appendix C

Demographic Questionnaire	
Response Item	Item Options
1. Are you currently serving on active duty?	Yes, No (Upon answering "No," participant will be exited from study)
2. Were you born biologically female?	Yes, No (Upon answering "No," participant will be exited from study)
3. Are you an American citizen?	Yes, No (Upon answering "No," participant will be exited from study)
4. What is your branch of service?	United States Air Force, United States Army, United States Marine Corps, United States Navy, United States Coast Guard, United States Space Force
5. Have you ever been formally diagnosed with PTSD by a licensed mental health professional or medical doctor?	Yes, No (Upon answering "Yes," participant will be exited from study)
6. Are you currently taking any medication for mental health concerns?	Yes, No (Upon answering "Yes," participant will be exited from study)
7. How many alcoholic drinks do you typically consume per week?	7 or less drinks per week, 8 or more drinks per week (Upon answering 8 or more drinks, participants will be exited from study)
8. When consuming alcohol, how many drinks do you consume in one sitting?	1-3, 4 and + (Upon answering 4 and + , participants will be exited from study)
9. Which best describes your fitness routine?	I exclusively practice yoga 3 or more times a week, I exclusively work out at a gym (either a public gym or a home gym) 3 or more times a week, I do not regularly work out
10. What is your current age?	Open-ended question (Any answer will allow participation in study)
11. What is your current rank?	Open-ended question (Any answer will allow participation in study)
12. How many years of service do you currently have?	Open-ended question (Any answer will allow participation in study)
13. What is your current duty station?	Open-ended question (Any answer will allow participation in study)
14. What is your current job in the military?	Open-ended question (Any answer will allow participation in study)
15. Which of the following is the number ONE PRIMARY stressor in your life currently?	Multiple choice: Work, Family, Finances, Lack of Social Supports (Any answer will allow participation in study)
16. Which of the following is the SECOND largest stressor in your life currently?	Multiple choice: Work, Family, Finances, Lack of Social Supports (Any answer will allow participation in study)
17. Which of the following is the THIRD largest stressor in your life?	Multiple choice: Work, Family, Finances, Lack of Social Supports (Any answer will allow participation in study)