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This paper addresses the problem of sleep deprivation among cadets in the Army ROTC program at James Madison University. Drawing on existing research and Army doctrine, the author examines the necessity of sleep for decision making, the biological consequences of sleep deprivation, and the effects of sleep deprivation on emotional intelligence. The paper also questions large, early-morning Physical Training (PT) sessions and their effectiveness in developing group cohesion. After comparing the research to the practices of the ROTC program, the author proposes a new training method for ROTC cadets to address the problems of sleep deprivation and large group PT.

Imagine the following situation: you have class at 8 a.m. every Monday, Wednesday, and Friday. The classroom is a ten-minute walk from the parking lot, and with traffic it takes ten minutes to get to the parking lot from your home. Parking usually goes fast, so if you want a spot, you have to leave at least ten minutes earlier to beat the other commuters, meaning you need to be out the door no later than 7:30 a.m. You get to class feeling sleepy and exhausted, hating the fact that you have to get up around 7 a.m. to arrive on time. Yet, unknown to you, the ROTC cadet sitting next to you has already been awake for three or more hours and still has a full day to go through, just like you.

A cadet in the ROTC program at James Madison University (JMU) has the same obligations, duties, and responsibilities as a member of the armed forces, though he or she is still considered a "student first." One of the many responsibilities of an ROTC cadet is maintaining a certain level of physical fitness by conducting physical training (PT) every Monday, Wednesday, and Friday; cadets who are in the junior class, or those who need additional help with their fitness, attend PT on Tuesday as well. Because most PT sessions are held at 5:50 a.m., Army ROTC cadets are prime candidates for experiencing sleep deprivation (given their obligations as cadets and students). However, rising this early in the morning helps address three goals of the ROTC program: it instills the discipline required of officers, avoids scheduling conflicts that prevent attendance, and helps develop group cohesion and pride, or *esprit de corps*. Unfortunately, these goals come at a cost: a lower total amount of sleep for the cadets per night.

When a cadet at JMU shows up to PT at 5:50 a.m., he or she is one of 149

The purpose of this paper is to address the issue of sleep deprivation within the ROTC program and explain the physical, psychological, and social consequences that result from it. The paper will also examine the potential benefits of lowering the PT group size from the size of the battalion (approximately 149 cadets) to four cadets per group. Finally, a study of experimental design will be proposed as a starting point for reforming the ROTC PT program at JMU.

Literature Review

Psychology of Group Fitness

Research has shown that group-based exercise programs are superior to individual exercise programs in regards to adherence and compliance to the program (Burke et al., 2010). However, in order for group-based exercise programs to be beneficial, members need to experience social contact and support (Burke, Carron, & Shapcott, 2008, p. 115). When a cadet at JMU shows up to PT at 5:50 a.m., he or she is one of 149. Susan Wheelan's (2009) study on work group size and group development shows how large groups are most likely less effective compared to smaller ones, noting that intimacy and cohesion, member satisfaction, participation, and expressed disagreement are negatively affected by increased group size. One possible way for members to experience a stronger sense of esprit de corps is to participate in the Integrated Model of Group Development, which is based on small group sizes of three to six members (Wheelan, 2009, p. 259). Though Wheelan's study focuses on work groups, this model could be applicable to other types of groups, such as ROTC.

The Integrated Model of Group Development identifies four stages of group development: "Stage 1: dependency and inclusion; Stage 2: counterdependency and fight; Stage 3: trust and structure; and Stage 4: work" (Wheelan, 2009, p. 252). The first stage is characterized by a dependence on an established leader and members seeking inclusion, the second by conflict with emerging group norms and expectations, the third by mature negotiations of roles, organization, and procedures as well as positive work relations, and the fourth stage by intense productivity and effectiveness (Wheelan, 2009, p. 250). Groups cannot move on to higher stages until they successfully master the previous stage; it is also possible for groups to regress to previous stages (Wheelan, 2009, p. 250). Groups that operate at the third or fourth stage are far more productive, and groups of three to six cadets have a significantly higher chance of reaching these stages (Wheelan, 2009, p. 250 & 255). Following this logic, PT sessions with 149 people could be less effective compared to smaller PT groups. Conducting PT at a different time and in smaller groups could allow the cadets to function better as a group, which in turn could allow them to develop a stronger sense of esprit de corps.

Biological Impact of Sleep Deprivation

All contracted ROTC cadets will one day become officers in the Army. They will be responsible for the total well-being (physical, emotional, spiritual, etc.) of the approximately 40 people under their command. These cadets need to understand that, as future officers, their future soldiers' physical well-being, as well as their own, is easily jeopardized by insufficient sleep. Without the proper amount of sleep, individuals can experience health problems such as allostatic overload.

Allostatic overload occurs when an imbalance is present in the body, disrupting allostasis. According to McEwen (2006), allostasis is the "active process that the body uses to establish and maintain equilibrium (homeostasis)," wherein two separate mediators act in a way to cancel out the opposing mediator (p. 20). Too much of one mediator

(allostatic overload) has harmful consequences. The physical results of allostatic overload related to sleep deprivation include increased blood pressure, decreased parasympathetic tone (hindering the ability to calm down when the heart rate is significantly increased), increased cortisol levels (a hormone created in response to stress and an excess of which can lead to Cushings Syndrome), and increased appetite (which has a correlation to obesity and increased body mass) (McEwen, 2006, p. 21).

These symptoms do not account for the neural reconstruction that occurs in various brain locations (McEwen, 2006). For example, the "nucleus accumbens, an area in the brain involved with the anticipation of reward, becomes selectively more active under the conditions of SD during high risk-high payoff choices" (Hamidovic & de Wit, 2009, p. 263). Not only does sleep deprivation affect the brain physiologically, but it also accounts for negative psychological effects, including the inability to self-regulate, control emotions, and think critically. Implementing a new training model with workouts scheduled at a later time would give ROTC cadets the opportunity to get more sleep, thus avoiding the negative consequences of sleep deprivation.

Sleep deprivation also negatively affects our emotional intelligence and character

Sleep deprivation and impulse control. Self-regulation is the process by which we exert control over our "cognitions, affect, and behaviour in order to align with a desired standard" (Barber & Munz, 2011, p. 315). The capacity for self-regulation can be increased through routine exercises of self-control. Self-control is "the process by which urges, desires, emotions, or behaviors that are in conflict with long-term goals are overridden or inhibited" (Muraven, Collins, & Nienhaus, 2002, p. 113). It differs from self-regulation because self-control is expressed externally through one's actions while self-regulation is an internal process. Self-control is exhibited by saying no within a given situation while self-regulation is maintaining one's thoughts to keep from being tempted or being put into that situation.

The ability to self-regulate is a finite resource that is "depleted by activities that involve resisting temptations/impulses, persistence, or logical reasoning" (Barber & Munz, 2011, p. 315). Like self-regulation, self-control is also a finite resource that is depleted after each use, meaning that an individual's ability to use self-control will suffer after continual suppressions of urges, emotions, thoughts, and/or behaviors (Muraven et al., 2002, p. 114). In order to maintain healthy levels of self-regulation ability, sufficient sleep is needed to replenish the original self-regulatory energy, and consistent sleep helps to enhance self-regulatory capacity (Barber & Munz, 2011, p. 315). The exact opposite of that statement also holds true: insufficient sleep leaves us with less self-regulatory energy to deal with stressors, and inconsistent sleep affects our behavior through "increased risk taking," "poorer decision making," and "deficiencies in reasoning and attention" (Barber & Munz, 2011, p. 315). Because sleep deprivation negatively influences self-control, cadets are left with a lower self-control baseline, which leads to increased risk behavior.

Sleep deprivation and risk assessment. Risk behavior is a multi-faceted concept that is directly observable, and "the amount of risk perceived will vary depending on the context and the situation" (McKenna, Dickinson, Orff, & Drummond, 2007, p. 246). Basic risk analysis involves considering one's actions based on the immediate understanding of what could be lost and what could be gained. McKenna et al. (2007) found that people who suffer from sleep deprivation "were willing to take more risk when they were considering a gain" (p. 250). It was also found that sleep-deprived individuals are "less concerned with negative consequences when faced with a potentially high reward" (Harrison & Horne, 2000, p. 239). Rewards don't need to be tangible; one can be rewarded with praise and social acceptance or with a desired physiological response.

Sleep deprivation and emotional impact. Unfortunately, the consequences of sleep deprivation are not limited to our physiology, levels of self-control, and the amount of risk we are willing to pursue; sleep deprivation also negatively affects our emotional intelligence and character. The Army Doctrine and Training Publication (ADRP) 6-22, "Army Leadership" (2012) identifies empathy as one of the four main elements of a leader's character. Empathy is a character trait that is based on emotional intelligence; it is defined as "the ability to understand the emotions of others by vicariously sharing them" (Guadagni, Burles, Ferrara, & Iaria, 2014, p. 658). Guadagni et al. (2014) note that "sleep deprivation reduces the specific ability to share emotions experienced by others" (p. 661). In addition to not understanding others on an emotional level, we are also more susceptible to reacting impulsively to negative emotions such as loss or shame. "Sleep deprivation has previously been shown to disproportionately intensify neural and autonomic reactivity to negative emotional stimuli," substantially contributing to the increase in suicidal ideation and the impulse to act on it (Anderson & Platten, 2011, p. 465).

In times when we are more susceptible to negative emotions, we need to lean on our loved ones. General Odierno, the 38th Chief of Staff of the Army, wrote in

2012 that "The strength of our nation is our Army; the strength of our Army is our Soldiers; the strength of our Soldiers is their families." ADRP 7-0, "Training Units and Developing Leaders" (2012) states that "Family well-being is essential to unit and individual readiness" (p. 2-5). When sleep deprivation strains personal emotional intelligence, it puts additional tension on interpersonal relations, including relations with family members, the very people needed to provide support. Vila and Samuels (2010) noted that "Fatigue also corrodes the quality of family and social interactions that help ground soldiers and buffer the impact of repeated exposure to a toxic work environment over the course of a decades-long career" (p. 799). When cadets or soldiers do not get enough sleep, there is a strong likelihood of entering a vicious cycle: a lack of sleep strains familial relationships, causing stress, which in turn makes it more difficult to sleep. The cycle's self-perpetuating nature once again shows the importance of addressing the root of the problem and not just the symptoms: if cadets are struggling with relational issues due to sleep deprivation, their ability to think critically and solve problems may also suffer greatly.

The ROTC program is currently undergoing a nationwide curriculum shift where there is more of a focus on developing well-rounded, well-educated officers. The curriculum is less focused on being tactics based as there is a stronger need for officers who can utilize critical thinking skills and constructive thinking, a concept where individuals use a combination of adaptive problem-solving and emotional and behavioral coping skills when faced with highly stressful situations (Killgore et al., 2008, p. 518). Constructive thinking requires high levels of emotional intelligence because the same area of the brain, the prefrontal cortex, regulates both kinds of skills, and constructive thinking is a more accurate predictor for successful living than an intellectual test (Killgore et al., 2008, p. 518). Under conditions of sleep deprivation, even accumulated partial sleep deprivation, the use of constructive thinking is highly reduced. Sleep is vital to our critical thinking ability, which correlates to the successful completion of any training.

Current Actions Being Taken by the Army

Since effective training and development are crucial to the success of the Army, the Army created the Training and Doctrine Command (TRADOC). It is TRADOC's responsibility to create the regulations, standards and requirements for all training, including the well-known Basic Combat Training (BCT). Soldiers entering BCT encounter a physically and mentally stressful environment that is unlike any that most people ever face (Crowley et al., 2012, p. 25). Even though the Army has created such a stressful environment, TRADOC has ensured that the enlisted soldiers are able to get enough sleep; in TRADOC Regulation 350-6 (2015), it explicitly states that all soldiers in BCT must have the opportunity for at least seven hours of sleep per night (p. 76). Based on informal polls and personal observation, most ROTC cadets average about five hours a night, which means that they are sleeping about 10 hours per week less than soldiers at BCT.

Proposed Solution

As shown, ROTC cadets are at a heightened risk for sleep deprivation due to early training times, negatively affecting their health and the function of the organization. Additionally, large group PT has been proposed as less effective for achieving esprit de corps. To address these problems, I propose conducting PT in smaller groups at a time other than 5:50 a.m. This alternate start time allows for an optimal group size for group cohesion and a more intensive and effective workout can be conducted (with more options and resources to be used such as the UREC pool) because it is easier for a smaller group to meet during the day. Lower leadership within the battalion would have more opportunities to practice responsibility, and more importantly, the cadets would be given more sleep.

The experimental program would manipulate the cadets' sleep and workout regimen

Below is my proposal designed for a small number of cadets to establish whether or not the cadets participating experience an increase of morale, fitness, and health as well as a decrease in risk behavior due to an increased amount of sleep. The experimental program would manipulate the cadets' sleep and workout regimen and measure their motivation, risk behavior, and fitness. Testing a new ROTC training program design could lead to beneficial results and also exemplifies one of the Army's traits of effective leadership. ADRP 6-22 (2012) states that "Strategic leaders are proactive towards change" (p. 11-4). In other words, just because it has always been done a certain way does not mean there is not a better way out there. This new design has the potential to be a more effective and efficient way to conduct PT, and if implemented, could promote noticeable differences in the cadets' behavior and performances.

Method

Participants

Prior to any action being taken with participants, this study would need approval from the JMU Institutional Review Board (IRB) to ensure all ethical guidelines were followed. The participants would include 40 randomly selected Army ROTC cadets from JMU, and ideally this group would include ten cadets from each academic year, ranging from 17 to 22 years of age. The remaining members of the JMU Duke Battalion would be included in the study for comparison purposes. The cadets' academic majors

would not be a factor in selection. Their incentives to participate include the immediate possibility of getting more sleep and the long-term benefit of knowing they could potentially adjust the program for future cadets.

Materials

The study would use two surveys, a physical fitness test, a sleep journal, and a sleep monitoring device called an actigraph. The first survey, created specifically for this study, would measure the cadets' level of motivation and group cohesion/pride at the beginning of the study using a Likert scale. The cadets would then be tested using the Youth Risk Behavior Surveillance System (YRBSS), which measures the frequency of risk behavior. The YRBSS examines six categories of risk behavior: "behaviors that contribute to unintentional injury and violence, sexual behavior that contributes to unintended pregnancy and [STIs], alcohol and other drug use, tobacco use, unhealthy dietary behaviors, and inadequate physical activity" (U.S. Department of Health and Human Services, 2015, par. 1). The Army Physical Fitness Test (APFT) would be used to evaluate the cadets' fitness prior to and post intervention. The APFT is composed of two minutes each of push-ups and sit-ups, followed by a two-mile run. The APFT would be conducted by graders who have been trained on proper forms and standards and would use stopwatches and a quarter-mile running track for the two-mile run. The actigraph, worn like a watch, tracks the movement of the wearer during sleep and monitors the quality and amount of sleep the participant receives. To confirm the accuracy of the sleep device, several of which are owned by James Madison University's Department of Psychology. the cadets would also complete a paper sleep log to track their sleep hours.

Permitting each group to create its own workout fosters responsibility, creativity, and teamwork

Procedure

There would be two separate experiments within the procedure. The entire experiment would be an ABA design in which the 40 cadets in the test group would take an initial baseline test (condition A), experience a new condition (condition B), and then be returned to the original condition (condition A). There will be two independent variables (IV) manipulated (hours of sleep and independent fitness regimen) and four dependent variables (DV) measured (motivation, group cohesion, fitness test score, and the level of risk behavior). Once consent forms are distributed, signed, and collected, the selected cadets would take the surveys and APFT in order to have a baseline score for later comparison. Afterward, the cadets will be randomly assigned to one of ten groups of four cadets in each group. The groups will be this size to allow for easier scheduling and more potential for more camaraderie. Each group would undergo the following procedure.

Sleep manipulation. The members of each group would be required to alter their sleep schedules by getting at least seven hours of sleep per night (during the school week), going to bed no later than midnight, and waking up no earlier than 7 a.m. (to be confirmed by the sleep journal and actigraph). This change would give the cadets an extra ten hours of sleep throughout the school week (not including the weekends). Additional sleep, whether from naps or longer sleep time at night, would be permissible. The cadets would be expected to continuously wear the actigraph and keep their journal up to date and accurate; moderators would check these weekly. Cadets not following the experiment requirements would be removed from the experiment and returned to the original PT schedule.

Fitness manipulation. The ROTC program would need to excuse cadets participating in the study from Battalion Physical Training (PT), and it would be the responsibility of the ten groups to create their own PT plans and have them approved by ROTC cadre before beginning the experiment. Each group would be required to take attendance at these sessions and document that PT was conducted. The restrictions for their plans would be as follows: it must be a group PT plan, they cannot meet during the already scheduled PT hours (5:50 a.m.–7 a.m.) because they should be sleeping, the workouts must be held at least three times a week, and the workouts cannot exceed one hour. The cadets could utilize any location, conduct any workout, and meet at any time they would like, as long as it is after 7 a.m. and it has prior approval. Although this allows for inconsistency, permitting each group to create its own workout fosters responsibility, creativity, and teamwork. Additionally, by testing different workouts using the APFT, the ROTC program can determine which ones are most effective, and since all workout plans must have prior approval, groups cannot conduct subpar workouts.

Reincorporation. At the end of the 30 days, every cadet in the battalion (including the group of 40) would be tested on the APFT. The sleep intervention group would retake the YRBSS, the APFT, and the initial survey that measured motivation/cohesion. The sleep intervention group would then be incorporated back into Battalion PT for another 30 days. They would continue to wear the actigraph and record their sleeping hours in the journal. At the end of the 30 days in the original condition of only getting approximately five hours of sleep per night, the 40 sleep intervention participants would once again be tested on the APFT and surveys to determine whether

there was a shift toward or away from the baseline. Overall, the duration of the experiment would be 60 days.

Data Analysis

The collected data would consist of the survey results, the total amount of sleep cadets had in both conditions, and the APFT results of all the cadets. To analyze the data, SPSS software would be used to identify all descriptive statistics and run a regression between the baseline and reintegration condition to see if there was a change after the first 30-day period and a return to the original condition after the second 30-day period. A factor analysis and correlational tests would be conducted between sleep and motivation, group cohesion, and YRBSS for the group of 40 cadets. The fitness scores for the group of 40 would be compared to the entire battalion's scores and evaluated using a 2x2x4 repeated measures ANOVA with an alpha level of .05.[1]

Justification

The JMU ROTC's Commander's Intent states that one goal of the program is to "develop officers who are critical thinkers that recognize when to apply theory and doctrine to real life situations." In Army Field Manual (FM) 6-22.5 (2009), which focuses on sleep deprivation among Army soldiers, Table 4-1 states that "ideal sleep period equals 7 to 8 hours of continuous and uninterrupted nighttime sleep each and every night. . . . Anything less . . . will result in some level of performance degradation" (p. 4-2). Section 4 in the doctrine begins by stating that "this guidance . . . applies to all levels of military operations, to include both training and tactical environments. Unit sleep plans should be based on this guidance" (p. 4-1). The negative effects of sleep deprivation combined with the potential for a high-stress environment can lead to a higher risk of mental illness. The Army has an epidemic on their hands: in 2012, mental health care was responsible for 40% of the military's hospital-related costs and is one of the most significant causes of lost military duty (Crowley et al., 2012). The Army does not need to commission cadets who are that much closer to being added to this statistic because they are chronically sleep deprived prior to even officially joining the Army.

It is important to note that there is only one way to overcome sleep deprivation, and that is to actually get sleep. FM 6-22.5 (2009) addresses two big assumptions and misconceptions occurring within the Army: that sheer willpower can overcome the struggles associated with sleep deprivation and that adequate levels of performance can be maintained with only four hours of sleep per night. The manual states that sheer determination or willpower cannot offset the mounting effects of inadequate sleep and that sleeping for only four hours a night for five or six consecutive nights (the sleep patterns of many cadets) causes just as much impairment as remaining awake for 24 consecutive hours (p. 4-6).

To allow for more sleep for the cadets, more effective workouts, and enhanced group camaraderie, a vision for an altered PT schedule has been proposed. Based on FM 6-0 (2014) standards, it is believed that the proposal is suitable, feasible, acceptable, distinguishable, and complete. If it is found that the behavior, motivation, and group pride of the cadets in the experimental group changes significantly from the extra hours of sleep and a new PT regimen, then the entire program would benefit by replicating the experiment on a larger scale. If the cadets' fitness scores are improved due to the different exercise regimen and sleep schedule, it would demonstrate that the cadets are risking sleep deprivation without any benefit and that PT is more effective at the squad level and after at least seven hours of sleep. If positive benefits were found in JMU's program, it would be suggested that at least three other colleges or universities replicate this study because these results could carry the potential to change the ROTC program structure on a national level.

References

Anderson, C., & Platten, C. R. (2011). Sleep deprivation lowers inhibition and enhances impulsivity to negative stimuli. *Behavioural Brain Research, 217*(2), 463-466. doi:10.1016/j.bbr.2010.09.020

Barber, L. K., & Munz, D. C. (2011). Consistent-sufficient sleep predicts improvements in self-regulatory performance and psychological strain. *Stress and Health, 27*(4), 314-324. doi: 10.1002/smi.1364

Burke, S. M., Carron, A. V., & Shapcott, K. M. (2008). Cohesion in exercise groups: An overview. *International Review of Sport and Exercise Psychology, 1*(2), 107-123. doi: 10.1080/17509840802227065

Burke, S. M., Shapcott, K. M., Carron, A. V., Bradshaw, M. H., & Estabrooks, P. A. (2010). Group goal setting and group performance in a physical activity context. *The International Journal of Sport and Exercise Psychology, 8*(3), 245-261. doi: 10.1080/1612197X.2010.9671952

Crowley, S. K., Wilkinson, L. L., Muraca, S. T., Wigfall, L. T., Louis-Nance, T., Reynolds, A. M., Williams, E. M., Glover, S., Herring, M. P., & Youngstedt, S. D. (2012). Mental health and sleep during basic combat training and beyond. *Sleep Science, 5*(1), 24-27. Retrieved from http://www.researchgate.net/publication/256090754_Mental_health_and_sleep_during_basic_combat_training_and_beyond

1ANOVA stands for analysis of variance and is used in this case to measure how the same subjects respond (the dependent variables) to the changes made (independent variables). The ratio of the differences measured between the two groups of cadets will be compared to the alpha level of .05 to determine if there are significant enough differences to suggest a correlation between the new fitness program and the level of fitness measured.

Guadagni, V., Burles, F., Ferrara, M., & Iaria, G. (2014). The effects of sleep deprivation on emotional empathy. J*ournal of Sleep Research, 23*(6), 657-663. doi: 10.1111/jsr.12192

Hamidovic, A., & de Wit, H. (2009). Sleep deprivation increases cigarette smoking. *Pharmacology Biochemistry and Behavior, 93*(3), 263-269. doi:10.1016/j.pbb.2008.12.005

Harrison, Y., & Horne, J. A. (2000). The impact of sleep deprivation on decision making: A review. *Journal of Experimental Psychology: Applied, 6*(3), 236-249. doi:10.1037/1076-898X.6.3.236

Killgore, W. D. S. (2007). Effects of sleep deprivation and morningness-eveningness traits on risk-taking. *Psychological Reports, 100*(2), 613-626. doi: 10.2466/pr0.100.2.613-626

Killgore, W. D. S., Kahn-Greene, E. T., Lipizzi, E. L., Newman, R. A., Kamimori, G. H., & Balkin, T. J. (2008). Sleep deprivation reduces perceived emotional intelligence and constructive thinking skills. *Sleep Medicine, 9*(5), 517-526. doi:10.1016/j.sleep.2007.07.003

McEwen, B. S. (2006). Sleep deprivation as a neurobiologic and physiologic stressor: Allostasis and allostatic load. *Metabolism: Clinical and Experimental, 55*(suppl 2), S20-S23. doi:10.1016/j.metabol.2006.07.008

McKenna, B. S., Dickinson, D. L., Orff, H. J., & Drummond, S. P. A. (2007). The effects of one night of sleep deprivation on known-risk and ambiguous-risk decisions. *Journal of Sleep Research, 16*(3), 245-252. doi:10.1111/j.1365-2869.2007.00591.x.

Muraven, M., Collins, L., & Nienhaus, K. (2002). Self-control and alcohol restraint: An initial application of the self-control strength model. *Psychology of Addictive Behavior, 16*(2), 113-120. doi: 10.1037//0893-164X.16.2.113

Odierno, R. T. (2012). Odierno: Army has three principle roles—"prevent, shape, win." *AUSA News*. Retrieved from http://www.ausa.org/publications/ausanews/specialreports/2012/03/Pages/default.aspx

U.S. Department of the Army. (2012). *Army leadership* (ADRP 6-22). Retrieved from http://armypubs.army.mil/doctrine/DR_pubs/dr_a/pdf/adrp6_22.pdf

U.S. Department of the Army. (2015). *Enlisted initial entry training policies and administration* (TRADOC Regulation 350-6). Retrieved from http://www.tradoc.army.mil/tpubs/regs/tr350-6.pdf

U.S. Department of the Army. (2009). *Combat and operational stress control manual for leaders and soldiers* (FM 6-22.5). Retrieved from http://armypubs.army.mil/doctrine/DR_pubs/DR_a/pdf/fm6_22x5.pdf

U.S. Department of the Army. (2014). *Commander and staff organization and operations* (FM 6-0). Retrieved from http://armypubs.army.mil/doctrine/DR_pubs/dr_a/pdf/fm6_0.pdf

U.S. Department of the Army. (2012). *Training units and developing leaders* (ADRP 7-0). Retrieved from http://armypubs.army.mil/doctrine/DR_pubs/DR_a/pdf/adrp7_0.pdf

U.S. Department of Health and Human Services, Centers for Disease Control and Prevention. (2015). Youth risk behavior surveillance system (YRBSS) overview. In *Adolescent and Youth Health*. Retrieved from http://www.cdc.gov/healthyyouth/data/yrbs/overview.htm

Vila, B., & Samuels, C. (2010). Sleep problems in first responders and the military. In M. H. Kryger, T. Roth, & W. C. Dement (Eds.), *Occupational sleep medicine* (5th ed., pp. 799-808). Philadelphia, PA: Elsevier - Health Sciences Division.

Wheelan, S. A. (2009). Group size, group development, and group productivity. *Small Group Research*, 40(2), 247-263. doi: 10.1177/1046496408328703