

A Review on Issue and Consideration of Military Personnel Cognitive Readiness for Malaysian Army

Hasmady Alim^{1a}, Ananthan, S.^{1a}, Norazman Mohamad Nor^{1b},
Amelia Yuliana Abd Wahab²

^{1a}Faculty of Defence Studies and Management, ^{1b}Faculty of Engineering
National Defence University Malaysia, Sungai Besi Camp, Kuala Lumpur Malaysia

²AbdulHamid AbuSulayman Kulliyah of Islamic Revealed Knowledge and Human Sciences
International Islamic University Malaysia, Kuala Lumpur Malaysia

To Link this Article: <http://dx.doi.org/10.6007/IJARPED/v12-i4/19935> DOI:10.6007/IJARPED/v12-i4/19935

Published Online: 15 December 2023

Abstract

The concept of cognitive readiness is related to the mental preparation of military personnel with knowledge, skill, and abilities (KSAs) to perform in a military operation that requires military personnel to think and react. The purpose of this article is to highlight the issue and consideration concept of cognitive readiness for the Malaysian Army (MA). The MA realizes the challenges in ensuring military personnel at each level (strategic, operational, and tactical) are cognitively ready for military operations involving multi-domination operations. To address this issue and consideration, the MA has to provide a strategy related to implementing the science of training related to factors that influence the transfer of training and its effect on cognitive readiness. Moreover, future research in this area should focus on developing theoretical and conceptual frameworks of cognitive readiness, which can explore and analyze factors that contribute to enhancing military personnel readiness in the MA.

Keywords: Cognitive Readiness, Military Personnel, Military Training, Transfer of Training, Human Resource Development

Introduction

The Malaysian Army (MA) has also been involved to meet the environmental changes since its establishment in 1933 from fighting communist counter-insurgency warfare to the contemporary setting of Hybrid Warfare. Currently, the MA launched Army4NextG for future development plans stated that human resource management is part of the force development to support the Malaysian Defence White Paper (MDWP) by focusing on moral, cognitive, and physical military personnel. The MA intends to develop Thinking Soldier as part of Army4NextG for the development of combat readiness (Malaysian Army (2021).

The way the MA thinks about combat readiness is driven by measures through Situational Force Scoring (SFS) (Inderjit et al., 2014). The SFS is an analytical tool that assesses the readiness of personnel, equipment, and logistics on how to maintain a level of combat

readiness. This essential approach allows the MA to make informed decisions about deployment and resource allocation to respond effectively to any threats or challenges. However, the MA realizes the challenges in multi-domain operations, technology, and the generation gap among military personnel need to be addressed by equipping military personnel with Knowledge, Skills, and abilities (KSAs) related to human dimensions readiness (morale, physical and cognitive) before deployment for military operations duties. The Malaysian Army (MA) identified that military personnel struggles with thinking skills, decision-making, and problem-solving during conducted military operation because of a lack of military knowledge, skills, and abilities (Malaysian Army, 2021). These problems, ultimately compromise military personnel's performance during complex and dynamic situations of military operations.

To address these issues, the preparation for the military personnel readiness to perform in complex operating environments needs consideration of the military personnel cognitive readiness concept (Crameri et al., 2021) benefits in MA. The concept needs a better understanding and how to develop a strategy to enhance the readiness and capabilities at each level (strategic, operational, and tactical) in the MA.

Issue of Military Personnel Cognitive Readiness

Cognitive readiness refers to the mental preparation of military personnel with military KSAs to perform in military operations (Crameri et al., 2021). Situation awareness, memory, transfer, meta-cognition, automaticity, problem-solving, decision-making, mental flexibility, creativity, leadership, and emotion are considered components related to cognitive readiness that needs to be established to deal with the COE involving multi-domain operations for processing information, making quick and accurate decisions in the complex operating environment of military operations (Crameri et al., 2021; Preddy et al., 2019; Anglin et al., 2017). The characteristics of the complex operating environment (COE) are dynamic, complex, and unpredictable require military personnel who are cognitively ready to sustain competence to execute the military mission. Cognitive readiness is essential for mission success and ensures that military personnel are capable of adapting to changing circumstances and making effective decisions at all levels (strategic, operational, and tactical) of the military organization during military operations.

Multi Domain-operation (MDO) involves the integration of land, air, sea, cyberspace, and space with military forces depending on effective coordination and collaboration across all domains to achieve mission success in military operations. The success of MDO relies on the cognitive skills of military personnel to have a high level of situational awareness, the ability to rapidly process information and effective decision-making in each domain, and maximize their combined capabilities in military operations. To achieve a level of military personnel readiness, the military organization must prioritize the development of a human resource that focuses on building and enhancing cognitive readiness to be capable of performing at their best in any situation. Military personnel must possess a range of cognitive skills to navigate the complex and unpredictable operating environment with disruptive technologies that have the potential to change the character of war.

In the context of Revolution Military Affairs (RMA), disruptive technologies have the potential to fundamentally change the character of warfare by introducing new capabilities, tactics, and strategies. New capabilities, tactics, and strategies can enhance military capabilities, but they cannot replace the importance of cognitive readiness. Military personnel is an essential component that potentially leads to better outcomes in military

operations (Billing et al., 2021; D'Angelo et al., 2019; Goodwin et al., 2018). In addition, the rapidly evolving nature of the military operations environment requires military personnel to be adaptable, quickly, and effectively operate with new technology to respond to an emerging threat. Moreover, military organizations must foster the development of military personnel's cognitive readiness by identifying components for improvement and allowing military personnel need to establish to be ready for deployment in the military operations environment (Flood & Keegan 2022; Fatkin & Patton, 2018; Friedl, 2018). Enhancing cognitive readiness also has obvious practical implications in military settings and better prepares military personnel for the realities of modern warfare.

Military organizations accepted that military operation environments have entered a new era of modern warfare that demands military personnel who are ready for missions. It is important to have cognitive capabilities to execute the task in stressful environments. To excel under such conditions, military personnel must possess a high degree of cognitive readiness that allows him/her to rapidly decide and act in COE. A survey conducted by the U.S. Department of Defence found that 87% of military personnel report experiencing at least some stress during military operations (Flood & Keegan, 2022). This result shows military personnel is faced with a range of environmental stressors that have consequences for cognitive processes, including attention and working memory. Understanding the COE under the unique condition of intense stress lead to military organization preparing military personnel for enhanced cognitive performance in combat scenarios.

The issue of military personnel's readiness, as identified above, is critical for success in modern military operations involving cognitive capabilities. Developing military personnel's cognitive readiness by prioritizing the component should be routinely enhanced through research and development especially military training to prepare military personnel KSAs needed in COE.

Consideration of Military Personnel Cognitive Readiness

How do military organizations prepare military personnel to deal with COE military operations? To succeed in the COE military operations, the military organization needs to consider preparing the cognitive readiness of military personnel in dealing with the advancement of technology and unpredictable situations. Human resource development in military organizations realizes that the development of future forces depends on military personnel who can think, react, and accurate decisions making when facing an uncertain situation in a dynamic environment (LaCroix et al., 2021; Belin et al., 2020; Salas et al., 2006). Studies agreed that military training is a strategy to train military personnel to be ready for any situation that can make the acquisition and transfer of complex cognition, behavior, and attitudes (Nindl & Kyröläinen, 2022; Hasselbladh & Yden, 2020; Laarni et al., 2020; Martin et al., 2020; Männiste et al., 2019). Therefore, military organizations have to invest in effective learning methodologies and training systems to enhance the cognitive readiness of military personnel.

The complexity and risk of military operations lead the U.S. military to spend an estimated \$17 billion each year to train military personnel to focus on the acquisition of knowledge, skills, and attitudes through military training that can be applied in real operational environments (Salas et al., 2006). The U.S. military's significant investment in military training to prepare military personnel ensures that the military remains an effective and capable force ready for any situation. The dynamic environments of irregular warfare, counterterrorism, stability operations, and humanitarian operations, which have arisen from

the conflicts and wars in the first decade of the 21st century requires U.S. military personnel need to be adaptive, make complex decisions, and be problem-solvers (Brunyé et al., 2020; Blacker et al., 2019; Hamilton et al., 2019). The changing nature of warfare from warfighting to peacekeeping and even counterterrorism demand decision about what to train, how to train, and how to implement and evaluate to meet these challenges.

Training provides the military KSAs to perform military tasks to help military personnel readiness at all levels. However, military organizations have to ensure that military personnel are prepared to handle the complexities and uncertainties of modern military operations by focusing on the outcomes of military training especially the cognitive readiness of military personnel. Modern military operations often involve high levels of uncertainty and ambiguity that demand military personnel be trained to develop KSA to become more effective and adaptable in rapidly changing environments. The science of training has offered a great deal of progress in training research, resulting in numerous training models, models, methods, and strategies (Salas & Cannon-Bowers, 2001). The science of training indeed made significant advancements over the year and contributed to improving training that is effectively applied in real-world contexts by examining factors that influence the transfer of training.

In military organizations, understanding the factors that influence the transfer of training is crucial for enhancing military personnel's cognitive readiness. Individual characteristics, training design, works environment, and military leaders play a critical role in promoting the transfer of training and its effect on the cognitive readiness of military personnel. By addressing these factors, military organizations can develop military personnel who are cognitively ready with KSAs to handle the complexities and uncertainties of modern military operations. Bray et al., (2014) conducted research related to enhancing military personnel who can perform in military operations under unique COE is a high priority. The challenges faced by military personnel are diverse, ranging from daily life military environment to the threat of injury or even death during military operations. Therefore, understanding the nature of military operations by military personnel and the readiness of cognitive functioning for this environment is of great importance.

The development of cognitive readiness is an essential aspect of preparing military personnel readiness in military organizations. This process begins when someone joins military service, either as a cadet (officer) or a recruit (enlisted personnel). This initial phase of transformation (civilians into military personnel), known as basic military training provides them with the necessary mental and physical skills to function effectively in the military environment. Recognizing individual characteristics, such as cognitive abilities, self-efficacy, and motivation to learn lead to more effective developments of cognitive readiness (Kosni et al., 2018; Oprins et al., 2018). By addressing these personnel traits, military training programs can be designed to enhance the cognitive readiness of military personnel throughout their career, ready to face the challenges and uncertainties of modern warfare.

In the constantly evolving landscape of modern warfare, incorporating individual characteristics or personnel traits aspects into training design allows military organizations to focus on the development of cognitive readiness. To achieve this, training design should consider the elements that can enhance decision-making, problem-solving, and situational awareness (Preddy et al., 2019; Patton et al., 2018; Mumford et al., 2017). By preparing military personnel with these elements in realistic training design, military organizations can develop more resilient and adaptable forces to navigate the complexities of 21st-century with confidence and skills. This may involve the use of varieties of training designs such as adaptive training, competency-based learning, performance feedback and assessment, collaborative

learning, technology-enhanced training, and lifelong learning and development, ultimately significantly developing the cognitive readiness of military personnel to face modern operations (Savage-Knepshield et al., 2021; Zanesco et al., 2019; Shortland et al., 2018; Zwilling et al., 2020).

In real-world modern operations, military personnel often face unpredictable situations and the need to adapt to rapidly changing circumstances in the work environment of military operations (Hoffman, 2021; Townsend, 2018). Ability to think critically, make sound decisions under pressure and work effectively to excel in the demanding environment of modern military operations by applying their training to real-world work environments through valuable experience and practical skill development that enhance cognitive readiness (Prykhodko et al., 2021; Rao et al., 2020a; Rao et al., 2020b). This continuous growth and adaptability ensure that military personnel readiness is better prepared to succeed in the mission objective of military operations through effective leadership at strategic, operational, and tactical levels within military organizations.

Military leaders are instrumental significant responsibility in fostering an environment that encourages the development of cognitive readiness (Paynter, 2022; Lyons et al., 2009 Griffith, 2006). By emphasizing training, open communication, mentorship, recognition of excellence, and teamwork, leaders cultivate a culture of continuous growth and improvement that contribute to military personnel readiness. Military leaders at strategic, operational, and tactical levels play an important role in enhancing the development of cognitive readiness among their personnel by creating a more comprehensive and holistic military training approach in environmental military contexts (Crameri et al., 2021; Harrison, 2014; Kirkland et al., 1993). By integrating components of cognitive readiness into military training, leaders can improve military KSAs necessary for success in modern military operations. Consequently, the continuous development and enhancement of training is an imperative investment toward optimizing performance to maintain military personnel readiness in the rapidly evolving landscape of military operations.

Conclusion and Future Agendas

Cognitive readiness is fundamental to military personnel readiness for effective performance in modern military operations. It involves mental preparations and requires military personnel to establish various cognitive skills such as situation awareness, memory, transfer, meta-cognition, automaticity, problem-solving, decision-making, mental flexibility, creativity, leadership, and emotion to sustain during the military operation. To achieve cognitive readiness, the transfer of military training is essential to embed these skills for a more prepared, effective, and resilient military force. Future agendas in this research this area should identify a theoretical and conceptual framework of cognitive readiness. This framework should be used to examine or explore for analysis what can contribute to the advancement of knowledge to MA in enhancing military personnel readiness.

References

- Anglin, K. M., Novell, C. A., Murphy, J. S., & Goodwin, G. A. (2017). Identifying predictors of Army marksmanship: a cognitive, affective, and psychomotor perspective. In *Proceedings of the Human Factors and Ergonomics Society Annual Meeting 61(1)*, 838-842.
- Belin, A. V., Berendeev, M. P., Mikerin, A. A., Kotov, P. F., Kostikova, L. P., & Belogurov, A. Y. (2020). Adaptability issues in professional training of the military. In *4th*

- International Conference on Culture, Education and Economic Development of Modern Society (ICCESE 2020)*, 660-663.
- Billing, D. C., Fordy, G. R., Friedl, K. E., & Hasselstrøm, H. (2021). The implications of emerging technology on military human performance research priorities. *Journal of Science and Medicine in Sport*, 24(10), 947-953.
- Blacker, K. J., Hamilton, J., Roush, G., Pettijohn, K. A., & Biggs, A. T. (2019). Cognitive training for military application: a review of the literature and practical guide. *Journal of cognitive enhancement*, 3, 30-51.
- Bray, R. M., Hourani, L. L., Williams, J., Lane, M. E., Marsden, M. E., Bray, R. M., ... & Marsden, M. E. (2014). Health and Behavioral Health in the Military. *Understanding Military Workforce Productivity: Effects of Substance Abuse, Health, and Mental Health*, 1-19.
- Brunyé, T. T., Brou, R., Doty, T. J., Gregory, F. D., Hussey, E. K., Lieberman, H. R., ... & Yu, A. B. (2020). A review of US Army research contributing to cognitive enhancement in military contexts. *Journal of Cognitive Enhancement*, 4, 453-468.
- Crameri, L., Hettiarachchi, I., & Hanoun, S. (2021). A review of individual operational cognitive readiness: theory development and future directions. *Human factors*, 63(1), 66-87.
- D'Angelo, M. R., Seibert, D., Welder, M. D., Cervero, R. M., & Durning, S. J. (2019). Decoding readiness: towards a ready military healthcare force. *Military Medicine*, 184(5-6), 122-126.
- Fatkin, L. T., & Patton, D. (2018). Mitigating the effects of stress through cognitive readiness. In *Performance under stress*. 225-246.
- Friedl, K. E. (2018). Military applications of soldier physiological monitoring. *Journal of science and medicine in sport*, 21(11), 1147-1153.
- Flood, A., & Keegan, R. J. (2022). Cognitive resilience to psychological stress in military personnel. *Frontiers in Psychology*, 13.
- Griffith, J. (2006). What do the soldiers say? Needed ingredients for determining unit readiness. *Armed Forces & Society*, 32(3), 367-388.
- Goodwin, G. F., Blacksmith, N., & Coats, M. R. (2018). The science of teams in the military: Contributions from over 60 years of research. *American Psychologist*, 73(4), 322.
- Hasselbladh, H., & Yden, K. (2020). Why military organizations are cautious about learning?. *Armed Forces & Society*, 46(3), 475-494.
- Hamilton, J. A., Lambert, G., Suss, J., & Biggs, A. T. (2019). Can cognitive training improve shoot/don't-shoot performance? Evidence from live fire exercises. *The American Journal of Psychology*, 132(2), 179-194.
- Harrison, T. (2014). Rethinking readiness. *Strategic Studies Quarterly*, 8(3), 38-68.
- Hoffman, F. (2021). Defeat Mechanisms in Modern Warfare. *The US Army War College Quarterly: Parameters*, 51(4), 49-66.
- Inderjit, S., Ananthan, S., ZS, N., & Kwong, F. W. (2014). The synchronization of human dimension factors in determining military command climate. *European Journal of Educational Sciences*, 1(3), 112-131.
- Kirkland, F. R., Bartone, P. T., & Marlowe, D. H. (1993). Commanders' priorities and psychological readiness. *Armed Forces & Society*, 19(4), 579-598.
- Kosni, N. A., Abdullah, M. R., Azman, S. N. W., Maliki, A. B. H. M., Musa, R. M., Adnan, A., ... & Juahir, H. (2018). Comparison of psychological readiness factors among the collegiate

- armed uniform. *International Journal of Academic Research in Business and Social Sciences*, 8(2), 97-115.
- LaCroix, J. M., Baggett, C. M. R., Lee-Tauler, S. Y., Carter, S. P., Vileta, S., Neff, L. C. R. D. R., ... & Ghahramanlou-Holloway, M. (2021). Special Operations Cognitive Agility Training (SOCAT) for Special Operations Forces and spouses. *Military Psychology*, 1-8.
- Laarni, J., Pakarinen, S., Bordi, M., Kallinen, K., Närväinen, J., Kortelainen, H., ... & Pihlainen, K. (2020). Promoting soldier cognitive readiness for battle tank operations through bio-signal measurements. In *Advances in Neuroergonomics and Cognitive Engineering: Proceedings of the AHFE 2019 International Conference on Neuroergonomics and Cognitive Engineering, and the AHFE International Conference on Industrial Cognitive Ergonomics and Engineering Psychology*, 142-154.
- Lyons, J. B., Swindler, S. D., & Offner, A. (2009). The impact of leadership on change readiness in the US military. *Journal of Change Management*, 9(4), 459-475.
- Malaysian Army (2021). Malaysian Army Transformations Plan. Malaysian Army Headquarters, MINDEF.
- Männiste, T., Pedaste, M., & Schimanski, R. (2019). Review of instruments measuring decision making performance in military tactical level battle situation context. *Military Psychology*, 31(5), 397-411.
- Mumford, M. D., Todd, E. M., Higgs, C., & McIntosh, T. (2017). Cognitive skills and leadership performance: The nine critical skills. *The Leadership Quarterly*, 28(1), 24-39.
- Martin, K., Périard, J., Rattray, B., & Pyne, D. B. (2020). Physiological factors which influence cognitive performance in military personnel. *Human factors*, 62(1), 93-123.
- Nindl, B. C., & Kyröläinen, H. (2022). Military human performance optimization: Contemporary issues for sustained and improved readiness. *European Journal of Sport Science*, 22(1), 1-3.
- Oprins, E. A., Bosch, K. V. D., & Venrooij, W. (2018). Measuring adaptability demands of jobs and the adaptability of military and civilians. *Military Psychology*, 30(6), 576-589.
- Patton, D., Townsend, L., Milham, L., Johnston, J., Riddle, D., Start, A. R., ... & Costello, K. (2018). Optimizing team performance when resilience falters: An integrated training approach. In *Augmented Cognition: Users and Contexts: 12th International Conference*, 339-349.
- Paynter, J. (2022). Modeling Aspects of Military Readiness. Doctoral dissertation, Massachusetts Institute of Technology.
- Preddy, J. E., Stefaniak, J. E., & Katsioloudis, P. (2019). Building a cognitive readiness for violent police-citizen encounters: A task analysis. *Performance Improvement Quarterly*, 32(1), 55-76.
- Proctor, S. P., Heaton, K. J., Lieberman, H. R., Smith, C. D., Edens, E. N., Kelley, A., ... & Quartana, P. J. (2017). Military cognitive performance and readiness assessment initiative.
- Prykhodko, I., Lyman, A., Matsehora, Y., Yurieva, N., Balabanova, L., Hunbin, K., ... & Morkvin, D. (2021). The psychological readiness model of military personnel to take risks during a combat deployment. *BRAIN. Broad Research in Artificial Intelligence and Neuroscience*, 12(3), 64-78.
- Rao, H. M., Smalt, C. J., Rodriguez, A., Wright, H. M., Mehta, D. D., Brattain, L. J., ... & Quatieri, T. F. (2020a). Predicting cognitive load and operational performance in a simulated marksmanship task. *Frontiers in Human Neuroscience*, 14, 222.

- Rao, A. K., Chahal, J. S., Chandra, S., & Dutt, V. (2020b). Virtual-reality training under varying degrees of task difficulty in a complex search-and-shoot scenario. In *Intelligent Human Computer Interaction: 11th International Conference, IHCI 2019*, 248-258.
- Townsend, S. J. (2018). Accelerating Multi-Domain Operations. *Military Review*, 4-7.
- Salas, E., Priest, H. A., Wilson, K. A., & Burke, C. S. (2006). Scenario-based training: Improving military mission performance and adaptability. *Military life: The psychology of serving in peace and combat: Operational stress*. Praeger Security International.
- Salas, E., & Cannon-Bowers, J. A. (2001). The science of training: A decade of progress. *Annual review of psychology*, 52(1), 471-499.
- Savage-Knepshield, P. A., Hernandez, C. L., & Sines, S. O. (2021). Exploring the synergy between human systems integration and human readiness levels: A retrospective analysis. *Ergonomics in Design*, 29(4), 16-24.
- Shortland, N., Alison, L., & Barrett-Pink, C. (2018). Military (in) decision-making process: a psychological framework to examine decision inertia in military operations. *Theoretical Issues in Ergonomics Science*, 19(6), 752-772.
- ZanESCO, A. P., Denkova, E., Rogers, S. L., MacNulty, W. K., & Jha, A. P. (2019). Mindfulness training as cognitive training in high-demand cohorts: An initial study in elite military servicemembers. *Progress in brain research*, 244, 323-354.
- Zwilling, C. E., Strang, A., Anderson, E., Jurcsisn, J., Johnson, E., Das, T., ... & Barbey, A. K. (2020). Enhanced physical and cognitive performance in active duty Airmen: evidence from a randomized multimodal physical fitness and nutritional intervention. *Scientific reports*, 10(1), 1-13.