

THE ROLE OF THE REHABILITATION CENTER OF THE MINISTRY OF DEFENSE OF THE REPUBLIC OF INDONESIA IN ENHANCING THE QUALITY OF LIFE OF DISABLED SOLDIERS OF THE INDONESIAN NATIONAL ARMED FORCES THROUGH THE UTILIZATION OF ARTIFICIAL INTELLIGENCE

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ABSTRACT

The Indonesian National Armed Forces (TNI) are frequently exposed to the risk of physical and mental injuries that may result in disability. The integration of artificial intelligence (AI) into integrated rehabilitation programs has the potential to expedite the recovery process, enhance diagnostic precision, and facilitate more tailored and efficacious care. This study aims to examine the role of Integrated Rehabilitation at the Rehabilitation Center of the Ministry of Defense of the Republic of Indonesia in improving the quality of life for Indonesian national army soldiers with disabilities. The research employs a normative juridical research method to systematically investigate the legal framework underpinning rehabilitation programs for soldiers and explores the potential integration of AI into these processes. The results show that the integrated rehabilitation services at Pusrehab Kemhan can improve the operational efficiency of the rehabilitation centre. The incorporation of AI in rehabilitation processes serves a crucial purpose in the context of improving the effectiveness of rehabilitation services for people with disabilities, especially for TNI soldiers. Despite challenges related to patient data privacy and security, the potential of AI is enormous.

INTRODUCTION

The Indonesian National Army (hereinafter referred to as 'TNI') is a form of state defence or a state instrument with the responsibility to uphold, save, and maintain the integrity and sovereignty of the state (Posma Juni Br. Purba, Haeranah, 2023). Formed in accordance with democratic principles, civilian supremacy, human rights, and the rule of law, both nationally and internationally. Its role as a state instrument in maintaining Indonesia's sovereignty is outlined in the UUD NRI 1945.

The Indonesian National Army (TNI) plays a pivotal role in ensuring the security and sovereignty of the country (Sulistyo, 2020). However, in the course of carrying out their duties, members of the Indonesian National Army (TNI) are frequently exposed to the risk of physical and mental injuries that may result in disability. Combat injuries, accidents during service, and mental disorders such as post-traumatic stress disorder (PTSD) are some of the challenges faced by TNI soldiers. Such injuries have a considerable impact on the social and economic aspects of soldiers' lives, rendering them susceptible to psychological disorders and a diminished quality of life.

The term "People With Disabilities" defined in the Online Indonesian Dictionary of the Ministry of Education and Culture as 'having a disability' (Tri Jata Ayu Pramesti, 2015). In the article entitled "Policy

for Handling Persons with Disabilities in the Ministry of Defence and the Indonesian Armed Forces", it is stated that 'diffable' is an acronym for 'different ability', and that this term is used to refer to individuals with different abilities. The term "disability" is employed in a neutral manner to circumvent discriminatory practices. In accordance with the International Classification of Functioning, Disability and Health, as adopted by the World Health Organization (WHO), disability is defined as encompassing impairments, activity limitations and participation restrictions (Erin Sudawarti, 2016).

TNI personnel with disabilities are defined as any soldier, including those undergoing training, who experience physical or mental disabilities as a direct result of their service or non-service duties. This condition can present a significant challenge for them in carrying out everyday activities. This disability is a direct consequence of the duties performed by these state servants. Those with disabilities among the Indonesian National Armed Forces (TNI) and Ministry of Defence (Kemhan) civil servants encounter difficulties in accessing sufficient and integrated rehabilitation services. These challenges may be attributed to a dearth of awareness regarding their entitlements, constrained physical access and information, and a paucity of tailored regulations pertaining to integrated rehabilitation. Such limitations also have an impact on the views of society, which can affect the psychological condition of the individual (Indah Fajarwati, 2008).

This psychological effect results in the individual being perceived as unable to fulfil their societal role. The loss of limbs among TNI soldiers and Kemhan civil servants has the potential to impact psychosocial equilibrium, foster passive social conduct, and precipitate traumatic experiences. Such self-acceptance may be perceived as false, potentially leading to feelings of ostracism or over-treatment. This could manifest as advice to refrain from certain activities. Such treatment has the effect of exacerbating the psychological state of the individual in question, preventing them from advancing beyond their comfort zone and thereby inhibiting their potential (J.D. Kennedy, 2021). Affection should serve to direct and motivate them to develop in a more optimal manner.

The Ministry of Defence of the Republic of Indonesia considers the quality of life of members of the Indonesian National Army (TNI) soldiers who experience disabilities due to military duties to be a significant issue. In accordance with the stipulations set forth in Law No. 8/2016 on persons with disabilities, an individual is classified as a person with a disability if they have experienced physical, intellectual, mental, and/or sensory limitations for an extended period of time. These limitations may impede their ability to interact with their environment in a manner that allows them to participate fully and effectively with other citizens on the basis of equal rights. These soldiers often have physical or mental limitations that prevent them from living a life of optimal quality (Rika Widianita, 2023). It is therefore evident that the Rehabilitation Center plays a pivotal role in providing integrated rehabilitation programs, which are instrumental in facilitating the recovery and rehabilitation of soldiers with disabilities.

The integrated rehabilitation facilities provided by the Rehabilitation Center of the Indonesian Ministry of Defense are designed to facilitate the professional, independent, and entrepreneurial development of Indonesian National Armed Forces (TNI) personnel and civil servants who experience disabilities. This opportunity is made available through the Return to Duty Programme or Integrated Rehabilitation, which is administered by Pusrehab Kemhan. All of these activities are conducted in an integrated manner, both at Pusrehab Kemhan and in regional units. This integrated rehabilitation programme is implemented in accordance with the provisions set forth in the Law on Persons with Disabilities, which establishes the rights of persons with disabilities with regard to rehabilitation. In accordance with Article 21 of the aforementioned legislation, individuals with disabilities are entitled to a range of entitlements, including the right to receive rehabilitation and inclusive rehabilitation services that align with their specific needs from an early age, the freedom to select the preferred form of rehabilitation, and the right to receive rehabilitation that respects human dignity (Undang-Undang Penyandang Disabilitas, 2016, Article 21).

The Rehabilitation Center of the Ministry of Defense of the Republic of Indonesia (Pusrehab Kemhan RI) offers opportunities for individuals with disabilities within the Ministry of Defense, particularly those who have sustained injuries or disabilities while on duty as members of the Indonesian National Armed Forces (TNI). Pusrehab Kemhan RI offers three distinct forms of rehabilitation services: social, medical, and vocational. This model has been developed to provide assistance to members of the TNI who have sustained disabilities as a result of accidents, whether occurring during their period of service or outside of it. This provides guidance to them in navigating their daily lives (Febrianti, Ayu & Fahrudin, 2020). Pusrehab Kemhan is responsible for the formulation

of technical policies, guidelines, and procedures in the field of rehabilitation, as well as their subsequent implementation, evaluation, guidance, and related supervision. Furthermore, Pusrehab Kemhan is tasked with programme preparation, budgeting, data management, and personnel development. The objective of integrated rehabilitation is to facilitate the restoration and development of the physical, mental, and social abilities of persons with disabilities, including those of TNI soldiers and Kemhan civil servants. This is done with the intention of enabling them to become independent, confident individuals who are able to fulfill their social roles in society without reliance on others.

The role of Pusrehab Kemhan is of great significance; however, the challenges encountered during the rehabilitation process remain considerable. One of the principal impediments is the unequal accessibility of services, in both physical and informational terms. It is frequently challenging for individuals with disabilities among the Indonesian National Army (TNI) soldiers and civil servants employed by the Ministry of Defence to access appropriate rehabilitation services, largely due to the scarcity of suitable facilities and resources. Furthermore, a lack of awareness of their rights and an absence of integration in rehabilitation programmes represent additional obstacles that require attention (Athira, 2018).

The rehabilitation of TNI soldiers presents a number of significant challenges over time. A multifaceted and efficacious approach is essential to address the diverse aspects of rehabilitation, including physical, mental, and social dimensions. In the context of the digital era, new opportunities have emerged that can be harnessed to address these challenges. The advent of technology, the internet, and social media has rendered them an inextricable aspect of state life and international relations. The Indonesian government is actively promoting the transition towards the fourth industrial revolution, with the potential for advancement towards the fifth. This is being achieved by placing a priority on the mastery of digital technology and the expansion of information in cyberspace. The advent of new technologies has given rise to a multitude of artificial intelligence (AI) systems that offer a plethora of benefits and conveniences. However, this technological advancement has also given rise to concerns regarding the potential neglect of natural human intelligence (Amelia et al., 2023). One potential avenue for enhancing the efficacy of integrated rehabilitation is the incorporation of artificial intelligence (AI).

The incorporation of artificial intelligence (AI) into integrated rehabilitation programs has the potential to expedite the recovery process, enhance diagnostic precision, and facilitate more tailored and efficacious care. Artificial intelligence has the potential to enhance the quality of life for military personnel through the development of innovative medical and recovery applications. These include the creation of more efficient assistive devices, the implementation of more personalised recovery programmes and the introduction of more precise health monitoring. Additionally, AI technology provides a range of solutions that can expedite the recovery process and enhance the personalisation and efficiency of rehabilitation services. To illustrate, AI can be employed to create more sophisticated prosthetics, facilitate more precise diagnoses, and monitor patient conditions in real time.

The incorporation of artificial intelligence (AI) into rehabilitation programs for disabled members of the Indonesian National Army (TNI) has the potential to yield considerable benefits. Artificial intelligence (AI) has the capacity to develop integrated rehabilitation programs that are specifically designed to meet the needs of each individual, by leveraging data from a range of physical and mental health parameters (Trianziani, 2020). It is capable of identifying recovery patterns and providing recommendations for each patient that are appropriate to their individual circumstances. Furthermore, AI can facilitate virtual physical and mental training, providing simulations that expedite and enhance the efficacy of the recovery process. The utilisation of AI facilitates the creation of more inclusive and efficient integrated rehabilitation programmes, enabling the implementation of tailored adjustments to each patient's physical and mental state. Furthermore, it allows for flexibility in practice, enabling individuals with disabilities to engage in recovery activities at their convenience, regardless of location.

The utilisation of AI in integrated rehabilitation programmes is also consistent with global trends in healthcare, whereby numerous countries have commenced the integration of this technology with the objective of accelerating the recovery process for individuals with disabilities. The application of AI technology has the potential to diminish patients' reliance on conventional medical interventions, facilitate a more quantifiable and uninterrupted therapeutic journey, and enhance their overall quality of life. The incorporation of artificial intelligence into integrated rehabilitation services at Pusrehab Kemhan has the potential to exert a considerable, beneficial influence on the lives of military personnel with disabilities. In accordance with this context, the incorporation of artificial intelligence into

Pusrehab will not only enhance the efficacy of physical and mental recuperation but will also have a beneficial impact on social aspects.

The application of artificial intelligence (AI) has the potential to facilitate the re-integration of soldiers with disabilities into society, enhance their quality of life, and reduce their reliance on external support. It is anticipated that this approach will enable them to resume a full role in social life with an enhanced level of independence. Furthermore, the advancement of AI technology can facilitate the government's long-term objective of ensuring the provision of inclusive, sustainable, and high-quality rehabilitation services. The utilisation of this technology enables Pusrehab to develop rehabilitation services that encompass not only the physical aspects, but also the mental and social aspects, thereby facilitating a more holistic and integrated approach to rehabilitation programmes.

In light of the aforementioned background, the present study attempted to examine the role of Integrated Rehabilitation at the Rehabilitation Center of the Ministry of Defense of the Republic of Indonesia in enhancing the quality of life of Indonesian national army soldiers with disabilities. Furthermore, the methods that can be employed to integrate artificial intelligence into the integrated rehabilitation process at the Rehabilitation Center of the Ministry of Defense of the Republic of Indonesia. This study contributes to military healthcare and rehabilitation by analyzing the role of Integrated Rehabilitation at the Ministry of Defense's Rehabilitation Center in improving the quality of life for Indonesian national army soldiers with disabilities. It explores innovative methods for integrating artificial intelligence into rehabilitation processes, enhancing efficiency and outcomes. By addressing the unique needs of disabled soldiers, the research supports the development of tailored healthcare policies and bridges technology with rehabilitation practices. Additionally, it lays a foundation for future interdisciplinary research on AI applications in military rehabilitation, fostering collaboration between healthcare, technology, and defense sectors.

METHODS

This study employs a normative juridical research method to systematically investigate the legal framework underpinning rehabilitation programs for Indonesian National Army soldiers with disabilities. The research focuses on the role of rehabilitation centers through integrated rehabilitation programs in improving the quality of life for soldiers and explores the potential integration of artificial intelligence into these processes.

The approach involves analyzing legal issues and the legal system, using primary legal materials such as Law Number 8 of 2016 on Persons with Disabilities and Government Regulation No. 75 of 2020 on Habilitation and Rehabilitation Services for Persons with Disabilities. These are supplemented by secondary legal materials to provide a comprehensive analysis and detailed description of the legal principles and policies relevant to the research objectives. The data collection and analysis are conducted systematically to ensure the findings align with the requirements of the study.

RESULTS

The Role of Integrated Rehabilitation at the Rehabilitation Center of the Ministry of Defense of the Republic of Indonesia in Improving the Quality of Life of Indonesian National Army Soldiers with Disabilities

Indonesia as the largest archipelago and fourth most populous country in the world, is endowed with a wealth of natural resources spanning the entire length of the country from Sabang to Merauke. As a tropical country with a long equatorial line, Indonesia is endowed with a vast array of natural resources. In order to maintain national sovereignty, it is necessary to ensure the protection of territorial integrity and to defend the nation against external threats. The Indonesian Army engages in a range of military operations with local, domestic, and international entities to achieve this objective (Yudhagama, 2010). The Indonesian National Army (TNI) plays a pivotal role in preserving the country's unity amidst its rich cultural diversity (*Bhineka Tunggal Ika*). The Indonesian National Army is constituted of three branches: the Army, the Air Force and the Navy. In its role as a state defence tool, the Indonesian National Army (TNI) bears significant responsibility for the country. The Indonesian Army (TNI AD) is prepared to undertake regional defence operations in a prompt, precise, autonomous and sustainable manner through the Territorial Command, with the objective of maintaining national defence. The primary responsibilities of the Indonesian Army are to safeguard the nation's sovereignty, uphold the integrity of the Republic of Indonesia in accordance with Pancasila and the 1945

Constitution, and protect the Indonesian people from threats that could destabilise the nation and state (Yudhagama, 2012).

TNI soldiers engaged in national defence duties are susceptible to a range of occupational hazards, both within the context of their service and as a consequence of the operational tasks they undertake. These risks can potentially impact the security of the country. A considerable number of them have sustained injuries that have resulted in the loss of body parts while carrying out their duties. Following the completion of military operations, some Army soldiers with disabilities return to their respective corps with the intention of adapting to a new work environment. The issues encountered by individuals with disabilities are inherently complex. The presence of a disability can result in a reduction in mobility capabilities due to the limitations imposed by imperfect organ function. This condition can present significant challenges for TNI soldiers with disabilities in the performance of their daily activities. Consequently, they are susceptible to psychological issues, including emotional lability, low self-esteem, and challenges in self-acceptance and social adaptation. It is not the case that all individuals are able to adjust well; many encounter a variety of obstacles, both intrinsic and extrinsic. Some individuals are able to make positive adjustments, whereas others experience negative adjustments. It is therefore necessary to implement a rehabilitation program to assist TNI soldiers with disabilities in overcoming the challenges they face.

The initiative was conceived as a means of honouring the memory of veteran figures who suffered work-related accidents in 1960, with a particular focus on those who had suffered organ damage and become disabled as a result. Subsequently, the concept of establishing a comprehensive rehabilitation facility offering integrated services in a single location, designated the Full-Fledged Rehabilitation Centre, emerged. This was articulated in the RC (Rehabilitation Centre) project proposal, which was drafted on 6 July 1968. The proposal was based on the Decree of the Menhankam/Pengab Number Kep/A/273/1968, which was also issued on 6 July 1968. This date marks a significant milestone in the establishment of an integrated rehabilitation centre for Indonesian National Armed Forces (TNI) personnel and veterans, operating under the auspices of the Department of Defence and Security (Dephankam) or ABRI, now known as the Ministry of Defence.

In the course of the 20th century, Barnes and Mercer advanced the view that disability was frequently linked with physical or mental deficiencies, including difficulties with mobility, the use of a wheelchair, physical illness, or mental impairment. Individuals with such limitations typically require the assistance of family members, friends, or social services provided by designated institutions. As cited in Barnes and Mercer's book, the World Health Organization (WHO) defines disability as a condition in which a person has physical limitations that prevent them from performing activities that are considered normal for most people (Barnes, C, Mercer G, 2007). The term "persons with disabilities" encompasses all individuals, including military personnel, who experience physical, intellectual, mental, or sensory limitations that prevent them from carrying out normal activities (Satya Arinanto, 2008). These limitations may be the result of service or may not be the result of service. Regardless of the cause, they hinder the individual's full and effective participation in society based on the principle of equality with citizens in general (Nations, 2007).

The Indonesian National Army (TNI) has established a system for categorizing the disabilities of its soldiers. This system is based on the results of testing and assessment conducted by the Soldier Disability Evaluation Committee (PEKP). This system comprises the following levels and classes of disability:

- 1) The disability rate of soldiers in the Indonesian National Army:
 - a) Mild disability (Level I): This refers to a physical or spiritual disability that does not significantly impair the ability of the affected soldiers to perform their duties within the context of the army.
 - b) Moderate disability (Level II): This category encompasses physical and spiritual disabilities that impede the ability of persons with disabilities of TNI soldiers to perform soldiering duties optimally. However, they may still be capable of working in administrative roles within the military environment and in external organisations.
 - c) Severe disability (Level III): A physical or spiritual disability that renders individuals with disabilities of TNI soldiers entirely incapable of working or engaging in any activities, thereby becoming a burden to others.
- 2) The disability classification system for Indonesian National:

- a) Group A: This category encompasses disabilities experienced by disabled TNI soldiers during the official period or due to illness. It does not include disabilities incurred while carrying out military operations or as a direct result of military service.
- b) Group B, which is experienced by persons with disabilities of TNI soldiers, occurs when carrying out duties or service orders that are not related to the duties of the TNI.
- c) Group C encompasses disabilities experienced by persons with disabilities of TNI soldiers when undertaking special service duties and/or military operations. This encompasses both duties carried out in military operations for war and duties carried out in military operations other than war (Dastara, 2023).

Since its establishment, the centre has played a pivotal role in providing assistance to soldiers and veterans with various injuries and disabilities. The integrated rehabilitation programme was officially inaugurated with the Rehabilitation Centre of the Ministry of Defence of the Republic of Indonesia (henceforth referred to as Pusrehab Kemhan) designated as the principal rehabilitation institution. Pusrehab Kemhan fulfils a supportive role in the execution of national defence obligations and responsibilities, operating in accordance with the guidance of the Minister of Defence through the Secretary General (Wahyu Firdaus, 2023).

The term "rehabilitation" is derived from two Latin words: "re," meaning "again," and "habilitation," meaning "ability." Consequently, the term "rehabilitation" encompasses the notions of recovery, healing, repair, and restoration. In general, rehabilitation can be defined as the process of repairing or curing a previously abnormal condition in order to restore it to a normal state (Zaha, 2024). Furthermore, personnel from the Ministry of Defence and the Indonesian National soldiers who have disabilities are Indonesian citizens with an obligation to participate in efforts to improve social welfare and play an active role in society and development. The Ministry of Defence, in particular the MoD Rehabilitation Centre, represents one of the institutions that provides a social service programme in the form of integrated rehabilitation. The programme encompasses social, medical and vocational rehabilitation (Nitimiharjo, 2004).

Social rehabilitation focuses on restoring the psychological and social capabilities of people with disabilities, with the aim of increasing their self-confidence and enabling them to function effectively in society (Subardhini et al., 2021). Various services are provided in the context of social rehabilitation, including Social psychological counselling, home visits and further counselling. Medical rehabilitation is a health service that aims to address physical and functional impairments caused by illness or injury. This service includes medical interventions, physical skills and rehabilitative measures to achieve optimal function. In medical rehabilitation, there are two types of services: general health services and specialised health services. Finally, vocational rehabilitation aims to provide the necessary skills, knowledge and technology to enable people with disabilities to return to work in the best way possible, according to their physical abilities. Vocational rehabilitation services consist of Skilled Level Vocational Training and Remote Class Vocational Rehabilitation. Participants in this integrated rehabilitation programme undergo a 4.5-month rehabilitation process during which they receive holistic support to improve their quality of life. This condition makes the term rehabilitation a description of people with disabilities as someone who is potential or only postulated, rather than as a whole human being (Fakih, 2001).

The Rehabilitation Center, operated by the Ministry of Defense of the Republic of Indonesia, is designed to facilitate the restoration and development of the physical, skill, mental, and social abilities of Kemhan personnel and TNI soldiers with disabilities. Through this programme, they are expected to reduce their dependency on others, increase their self-confidence and assume social roles in society according to their abilities. The legal basis for integrated rehabilitation is Law of the Republic of Indonesia No. 8 of 2016 dated 15 April 2016 on Persons with Disabilities, Government Regulation (PP) No. 45 of 2011 on Amendments to Government Regulation of the Republic of Indonesia No. 56 of 2007 on Compensation and Allowances for Disabled Soldiers of the Indonesian National Army.

Pusrehab Kemhan's responsibilities include the preparation of technical policies, programmes and budgets related to the rehabilitation of TNI soldiers and Kemhan civil servants with disabilities. Pusrehab Kemhan also implements technical policies in various areas of rehabilitation, such as medical, vocational, social and hospital management rehabilitation. The centre is tasked with drafting relevant regulations and technical guidelines and facilitating the implementation of technical policies and licensing in such rehabilitation. Pusrehab Kemhan monitors, evaluates and reports on the

implementation of the established technical policies and is responsible for the administrative and financial of the centre management.

The rehabilitation centre focuses not only on the physical aspects, but also on the mental and social well-being of people with disabilities. Through integrated programmes, Pusrehab Kemhan aims to restore and improve the quality of life of soldiers and veterans by providing access to a holistic range of rehabilitation services. In doing so, the centre helps rebuild the independence and self-confidence of TNI soldiers with disabilities, which is essential for them to return to optimal functioning in society. This initiative demonstrates the Indonesian government's commitment to addressing the rights and needs of persons with disabilities, as required by applicable laws and regulations. With the existence of Pusrehab Kemhan, it is hoped that soldiers and veterans will receive rehabilitation services tailored to their needs, so that they can once again contribute to nation-building despite the various limitations they face.

Integration of Artificial Intelligence in the Integrated Rehabilitation Process at the Rehabilitation Center of the Ministry of Defense of the Republic of Indonesia

Entering the era of Society 5.0, which is characterised by rapid technological progress and the increasingly widespread use of technology in everyday life. Advanced technology has been created to make human life better and more comfortable. In general, this technology helps make all activities easier for human work (Mufti Istal Thofa Bhakti Nurroji Sumadi, Raka Putra, 2022). One of the advanced technology trends that is starting to be applied in almost all sectors, especially in Southeast Asia, is Artificial Intelligence (AI) (A. Atsar and B Sutrisno, 2022). Artificial Intelligence (AI) is a branch of computer science that allows computers to perform tasks that are normally done by humans. Computers were originally created as computational tools, but over time their role has grown to dominate human life. Now, computers are expected to not only function as computational tools, but also to perform various functions similar to human capabilities (Kusumawati, 2018). In Indonesia, the development of AI is very rapid and is seen as positive. This technology is designed to solve specific problems with human-like thinking abilities. In order to function optimally, AI requires large amounts of data and specialised algorithms related to its field. One technology that is currently of interest is rehabilitation.

The integration of artificial intelligence into rehabilitation processes serves a crucial purpose in the context of improving the quality of rehabilitation services for people with disabilities. Artificial Intelligence (AI) is increasingly recognised as an effective tool in various fields, including health and rehabilitation. Integrating artificial intelligence (AI) into the rehabilitation process within the Ministry of Defence of the Republic of Indonesia, especially for Indonesian National Army (TNI) soldiers with disabilities, is a strategic step to improve the effectiveness of rehabilitation services. Soldiers with disabilities in the TNI often face complex challenges due to physical injuries, post-traumatic stress or other conditions resulting from their duties.

TNI soldiers with disabilities are those who are disabled as a result of their state duties, not those who are born disabled. They used to have an ideal body posture as soldiers. This condition certainly has a different psychological impact in terms of self-acceptance and reactions from those around them. In addition, soldiers who have been involved in military operations have a higher risk of psychological disorders (Larasati et al., 2023). A soldier who fulfils the physical soldiering standards perfectly then experiences a post-deployment accident that causes a physical disability or handicap that affects his career and psychological state.

Integrating artificial intelligence into rehabilitation can help improve the effectiveness of diagnosis. AI has the ability to analyse health data quickly and accurately, allowing medical staff to identify health problems more accurately. Using machine learning algorithms, AI can identify patterns that may be missed by human medical staff, allowing for earlier and more accurate diagnosis. AI has the potential to facilitate the development of individualized rehabilitation treatment plans that are specifically designed to address the unique needs of TNI soldiers. Every TNI soldiers with a disability has unique and different conditions and needs, so a 'one-size-fits-all' approach is no longer relevant. By using AI, rehabilitation enables the analysis of a soldier's data, encompassing medical history, physical condition, and response to previous treatments. This analysis allows for the development of a more personalized and effective rehabilitation plan.

In the context of progress monitoring, artificial intelligence can facilitate more efficient monitoring of soldiers progress. Wearable technology and AI-based apps can collect real-time data on physical activity, mental health and response to therapy. This allows the integrated rehabilitation team

to monitor the progress of the disabled soldier on an ongoing basis and make necessary adjustments in the treatment plan. The importance of using AI-based applications is also seen in individual needs assessment. These apps can be designed to conduct a comprehensive evaluation of each disabled soldier's condition, providing deeper insights into the specific needs that must be met during the integrated rehabilitation process. With accurate and up-to-date data, providers can make better decisions and respond more quickly to TNI soldiers disabilities needs. Training and education can also be supported by AI technology. Through AI-based simulations, TNI soldiers with disabilities can practice physical and mental skills in a safe virtual environment. This gives them the opportunity to practice independently, build confidence and speed up the recovery process.

Pusrehab Kemhan RI has 3 patterns of services provided, namely social rehabilitation, medical rehabilitation and vocational rehabilitation. The vocational rehabilitation field at Pusrehab Kemhan RI provides skills, knowledge and technology services as a provision to restore the ability to work. Each employee is fostered optimally in accordance with their physical limitations. TNI soldiers and Kemhan civil servants with disabilities are directed according to their abilities and interests to participate in this integrated rehabilitation program (Ardilla et al., 2021). At present, the Vocational Pusrehab Kemhan RI offers 15 courses, including auto and motor mechanics, carpentry, integrated agriculture, tailoring, electronics and mobile phone repair, welding, refrigeration, photography, computer operator, computer engineering, graphic design, music, shiatsu massage and catering. These various courses are designed to equip people with disabilities with practical skills according to their interests and talents, and to help them to re-integrate into the world of work (Erlin Sudarwati, 2024).

An example of how the integration of artificial intelligence (AI) into a computer-based vocational rehabilitation system can improve the efficiency and accuracy of data management and administration. AI can be used to optimise a database system containing training information and data on people with disabilities, both from the Indonesian National Army (TNI) soldiers and from civil servants (PNS) in the Ministry of Defence, for faster and more accurate analysis. AI can help manage large and complex data sets and provide appropriate training recommendations based on individual profiles and needs. This not only simplifies administration, but also ensures that each TNI soldiers with a disability receives the right training programme to improve their skills more effectively and personally (Wibowo & Usna, 2022).

A system-based information system for the field of vocational rehabilitation is designed to facilitate data collection of rehabilitation participants who have attended training and present information related to the rehabilitation field. Previously, data collection of participants was done manually, which often caused difficulties for the administration in recording training participants. With a system-based information system, the recording process becomes more efficient and organised. The system also makes it easier to search for data on persons with disabilities from the Indonesian National Army soldiers and Civil Servants at the Ministry of Defence who will or have attended vocational training.

Not only providing benefits to TNI soldiers with disabilities, AI-integrated rehabilitation has the potential to improve the operational efficiency of the integrated rehabilitation centre. This will enable the integrated rehabilitation centres to fulfil their role in restoring and enhancing the physical, mental and social capabilities and skills of the TNI soldiers. By implementing more automated processes, medical staff can focus more on direct interaction with patients and building strong therapeutic relationships. Meanwhile, AI will manage data and information analysis, allowing medical staff to focus on more holistic patient care, such as vocational rehabilitation. However, there are several challenges to implementing artificial intelligence in rehabilitation programmes. One of the main challenges is ensuring that the data used in the integrated rehabilitation process is accurate, complete and secure. In this context, maintaining the privacy and security of data on TNI Soldiers with disabilities is very important. Therefore, it is imperative to develop clear policies and procedures on how data is collected, stored and used to protect such sensitive information.

It is important to train medical and integrated rehabilitation staff in the use of AI technology. With proper training, they will not only understand how to use these tools, but will also be able to interpret the results from the AI system and make informed decisions based on the data. This will ensure that the technology is used effectively to improve the quality of care. In addition, it is crucial to involve people with disabilities and their families in the process of developing and implementing AI technologies. Their feedback can provide valuable insights into how these technologies can be optimised to meet their specific needs.

By involving all stakeholders, rehabilitation programmes can be designed to be more responsive and inclusive, creating a more supportive environment for TNI soldiers disabilities. Despite these challenges, the potential for artificial intelligence to improve the quality of rehabilitation services is immense. By using AI, integrated rehabilitation centres can optimise the effectiveness of diagnosis, treatment and progress monitoring for TNI soldiers with disabilities.

CONCLUSION

The Rehabilitation Center of the Ministry of Defense of the Republic of Indonesia (Pusrehab Kemhan) is a vital service that aids Indonesian National Armed Forces (TNI) personnel and veterans with injuries and disabilities. The integrated rehabilitation program, which includes social, medical, and vocational components, aims to improve the physical, mental, and social capabilities of these individuals. The program aims to reduce dependency, increase self-confidence, and encourage active participation in society. The integration of artificial intelligence (AI) in rehabilitation, particularly for TNI soldiers, is a significant step in improving the service's effectiveness. AI can speed up diagnosis, design treatment plans, and monitor progress in real time. The MoD Rehabilitation Centre provides social, medical, and vocational rehabilitation programs supported by AI-based applications for efficient data management. Future research could explore AI-driven rehabilitation models, patient data security and privacy, comparative studies of AI integration, AI and vocational training for persons with disabilities, long-term impact of AI-integrated rehabilitation, and policy recommendations for AI implementation.

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