

Applying the Salutogenic Model in the Czech Armed Forces: Developing a Methodology for Evaluating Resilience and Health Outcomes

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Abstract. *This article applies the salutogenic model to the specific context of the Czech Armed Forces, focusing on soldiers and female soldiers. The main objective is to evaluate the relevance and applicability of Aaron Antonovsky's salutogenic model among service members, with emphasis on mental and physical health outcomes. The theoretical part offers a structured summary, compilation, and comparison of relevant scholarly sources, addressing core indicators of mental and physical resilience in military settings. The methodological section presents the development and adaptation of a diagnostic tool originally introduced by Sedláková and Kovářová (2025), modified for use with personnel of the Czech Army. This tool is tailored to the occupational demands and stress factors experienced by soldiers. The result is a practical, research-based methodology that allows for the evaluation of key components of the salutogenic model—comprehensibility, manageability, and meaningfulness—among members of the armed forces. The findings are intended to support both academic understanding and practical implementation of mental health and resilience assessment in military environments.*

Keywords: salutogenic model; service members; soldiers; female soldiers; mental and physical health

JEL Codes: I12, I13, H51, J21, J24, J16

1. Introduction

The profession of a career soldier in the Armed Forces of the Czech Republic (AFCR) involves a wide range of physical, psychological, and social demands that significantly exceed those of typical civilian occupations. Ensuring long-term operational readiness and promoting the health of AFCR personnel requires an understanding not only of chronological age but also of mental and physical (biological) age. Each of these dimensions offers a distinct perspective on an individual's preparedness, resilience, and ability to adapt to the demanding conditions of military service. These factors are closely linked to the concept of salutogenesis – the processes that support health and the capacity to cope with stress (Antonovsky, 1979).

Military service is accompanied by specific stressors – ranging from direct combat deployment and separation from family to long-term residence in a rigid hierarchical system with limited autonomy (Adler and Castro, 2013; Bystrický, 2024). These conditions can lead not only to acute stress but also to long-term psychological exhaustion, which impacts both individuals and the performance of entire units (Laně, 2024). A critical aspect of military life is the lack of control over one's environment – including the inability to influence deployment location, team composition, or mission duration – which may lead to frustration, anxiety, or a loss of meaning among some soldiers (Schnyder and Clum, 1989; Suedfeld, 1997). Such states can develop into burnout syndrome, especially among soldiers engaged in routine duties over extended periods without opportunities for professional development (Laně, 2024).

The most common manifestations of impaired mental health in the military environment include post-traumatic stress disorder (PTSD), depression, anxiety, suicide risk, and burnout. Research from the U.S. military context, for instance, shows that up to 17 % of soldiers returning from Iraq and Afghanistan meet

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the criteria for PTSD (Tedeschi and Calhoun, 1996; Bonanno, 2004). Prolonged stress without intervention or social support may escalate into self-destructive behavior, and in extreme cases, suicide (Southwick et al., 2005; Pietrzak et al., 2009). The salutogenic approach, which focuses on health promotion and the development of resilience rather than solely on disease prevention, provides a suitable framework for long-term engagement with military personnel. In conditions of chronic stress – often characteristic of military settings – this approach can strengthen both individual and collective capacities to cope with challenging situations. At the core of salutogenesis lies the sense of coherence (SOC), defined as the extent to which one perceives life as comprehensible, manageable, and meaningful. This internal structure supports soldiers in maintaining psychological equilibrium even under extreme conditions (Antonovsky, 1979; Eriksson & Lindström, 2006; Mittelmark and Bauer, 2017). To effectively implement the salutogenic model within the AFCR, interdisciplinary collaboration is essential among psychologists, medical staff, commanding officers, and educational institutions (Křivohlavý, 2001; Kalina, 2010). Only through such cooperation can a system be established that provides not only immediate support but also long-term tools for managing stress and sustaining overall well-being – mental, physical, and social.

2. Research Elaboration

Integrated Understanding of Chronological, Mental, and Physical Age in the Professional Military Context: A Salutogenic Perspective

Professional soldiers in the Armed Forces of the Czech Republic (AFCR) operate under intense physical and psychological demands that go beyond those of civilian occupations. To effectively manage personnel readiness and long-term sustainability, it is crucial to understand the interplay between chronological, mental, and physical age. Chronological age, defined as the number of years since birth, is a key parameter in recruitment and career progression as regulated by Act No. 221/1999 Coll., which sets the age range for enlistment from 18 to 60 years. However, age alone is not sufficient for assessing a soldier's overall operational capability. Mental age reflects cognitive maturity and adaptability, which are fundamental for stress response, decision-making under pressure, and psychological resilience. Mental toughness and post-traumatic growth capacity have been shown to significantly influence a soldier's ability to withstand and recover from combat-related stressors (Tedeschi and Calhoun, 1996; Bonanno, 2004). Physical age, which refers to biological condition and functional fitness, may differ markedly from chronological age and is regularly assessed within the AFCR. Despite natural age-related decline in physical performance, long-term physical resilience can be maintained through structured training, and the concept of hardiness has been linked to reduced illness rates and greater endurance (Bartone, 1999; King et al., 1998).

Salutogenic theory, introduced by Antonovsky (1979), provides a framework that focuses not on disease, but on factors supporting health, adaptability, and resilience. This model is particularly applicable in the military context, where both physical strength and psychological endurance are vital. Soldiers with a high sense of coherence, supported by leadership, social networks, and organizational structures, cope more effectively with stressors inherent in military service (Southwick et al., 2005; Pietrzak et al., 2009). Officers and commanders play a central role in shaping the mental resilience of their subordinates through training, motivation, and examples (Boe and Bang, 2012). In addition to individual traits, institutional factors such as unit cohesion and the ability to maintain perceived control over one's environment help prevent mental health deterioration (Schnyder and Clum, 1989; Suedfeld, 1997).

However, several high-risk stressors continue to pose challenges, especially during foreign deployments. These include direct combat exposure, prolonged family separation, strict hierarchical constraints, and lack of autonomy. Direct exposure to life-threatening situations, death of comrades, and repeated deployments significantly increase the risk of PTSD and depression (Hoge, 2004; Bystřický, 2024). Long-term separation from family disrupts emotional bonds and increases the incidence of divorce and relational instability (Paley, Lester and Mogil, 2013; Schwanová, 2022). Military culture, characterized by low autonomy and routine duties, may also contribute to burnout, especially in garrison settings with repetitive roles (Adler and Castro, 2013; Laně, 2024). Soldiers often report a lack of agency over operational conditions such as deployment

location, team composition, or service duration, which further intensifies psychological strain. Recognizing the differences between chronological, mental, and physical age and applying salutogenic strategies allows for more effective management of soldiers' well-being and prolongs their functional careers within the armed forces.

Sense of Coherence as a Foundation of Mental Resilience in Soldiers

At the core of the salutogenic model lies the concept of the Sense of Coherence (SOC), a psychological orientation reflecting a person's confidence that life is comprehensible, manageable, and meaningful. According to Antonovsky (1987), individuals with a strong SOC perceive internal and external stimuli as understandable and structured, believe they possess the resources to deal with these stimuli, and view the resulting demands as meaningful and worth the effort. SOC is not an innate characteristic; it is shaped through life experiences, especially during childhood and adolescence. In a military context, SOC plays a crucial role in the psychological resilience of soldiers. Those with a strong SOC are more resistant to stress, better equipped to cope with psychological strain, and less likely to develop symptoms of anxiety or depression (Eriksson and Lindström, 2006). The three components of SOC—comprehensibility, manageability, and meaningfulness—manifest in specific ways in the lives of military personnel.

Comprehensibility refers to the degree to which a soldier perceives events and situations as structured and predictable. A high level of comprehensibility allows soldiers to navigate crises with greater psychological stability. Manageability involves the belief that one has access to the necessary resources—both internal, such as skills and self-efficacy, and external, such as team support or leadership—to overcome challenges. For professional soldiers, manageability is often supported by quality training, strong organizational structures, and trust in command. The third and most motivational element, meaningfulness, represents the degree to which an individual perceives challenges as worthy of engagement. Soldiers who find purpose in defending their country, protecting others, or remaining loyal to their unit are more resilient and capable of coping with adversity (Antonovsky, 1987; Frankl, 2006). SOC also significantly contributes to adaptation during various demanding phases of military service, such as rigorous training, deployment in extreme environments, and the transition to civilian life. Research shows that soldiers with a higher SOC report fewer symptoms of post-traumatic stress and apply more effective coping strategies (Schnyder et al., 2000; Nilsson et al., 2012).

The salutogenic model can be applied across the full life cycle of a soldier—from recruitment through active duty to reintegration. During recruitment and selection, psychological assessments can identify candidates with high SOC potential and strong motivation. In training, in addition to physical and tactical readiness, there should be a focus on developing resilience and the ability to find meaning in hardship (Kalina, 2003). Active service places soldiers under intense stress due to operational deployments, family separation, and high-performance demands. A salutogenic approach during this phase involves reinforcing social support, purpose in service, and early intervention when traumatic stress arises. Transitioning out of the armed forces often brings uncertainty and identity loss. Supporting former soldiers in this phase means helping them find new social roles, meaningful employment, and stable environments (Lechner and Bolman, 2016; Zbranek et al., 2018). Implementing the salutogenic model effectively requires interdisciplinary collaboration between psychologists, commanders, educators, and health professionals. A comprehensive support system—focused on prevention, education, intervention, and reintegration—is essential to sustain the mental health and well-being of soldiers (Křivohlavý, 2001; Kalina, 2010). In conclusion, the salutogenic model, with SOC as its core, offers a robust, holistic framework for enhancing the psychological resilience of soldiers throughout their careers. By strengthening the sense of coherence, armed forces can foster greater stress resistance, improve adaptation, and maintain the long-term health of their personnel (Mittelmark and Bauer, 2017; Eriksson and Lindström, 2006).

Mental Health and the Role of Physical Activity Across the Life Course

Mental health is an integral component of overall human health and well-being (WHO, 2022; Galson, 2009). When functioning properly, it enables individuals to better understand themselves, interact effectively with others, cope with complex situations, and resist psychological pressure. Although many people may exhibit

high levels of psychological resilience, adverse life experiences—such as violence or inequality—can impair even the most robust mental states. The greatest risk to mental health stability often arises during childhood, but it is important to recognize that vulnerability exists across all stages of life. For this reason, mental health receives increasing attention globally and is enshrined as a fundamental human right. (WHO, 2022)

From both expert and public perspectives, impaired mental health should be viewed as a chronic health condition that, in most cases, can be treated. Mental health issues ought to be approached as conditions that are manageable and treatable, and individuals should not feel hesitant to seek help (Galson, 2009). Today, the most common barriers to seeking professional help are attitudinal—for example, social stigma, the desire to manage the issue independently, or a low perceived effectiveness of treatment (Kanehara et al., 2015; WHO, 2022). Among younger populations, mental health risks are increasingly linked to unhealthy habits, often associated with insufficient physical activity, inadequate sleep, and substance use (Wiens et al., 2019). Despite the growing prevalence of mental health issues, explicit references to such concerns—particularly within higher education—remain rare, and the root causes are frequently underreported. For instance, as early as 2007, stress was already recognized as one of the most significant factors negatively affecting students' academic performance and shaping their social identity (Clark, 2017). The prevalence of mental disorders varies significantly by age and gender, with anxiety and depression being the most frequently reported symptoms across both sexes. (WHO, 2022)

In many countries, mental health funding is primarily directed toward psychiatric hospitals, which are often unevenly distributed and may fail to provide adequate care to those in urgent need. (WHO, 2022) In military contexts, it is crucial to consider the risk of psychological disruption among individuals exposed to extreme stress during deployment. This has led to the use of pre-deployment mental health assessments to evaluate individual readiness, a phenomenon known as the "healthy warrior effect," which results in the exclusion of individuals with lower psychological resilience from mission assignments (Wilson et al., 2009; Lyk-Jensen et al., 2016).

As mentioned earlier, physical activity plays a critical role in supporting mental health throughout the human lifespan. A comprehensive understanding of this relationship requires examining various age groups, as the psychological effects of physical activity may differ by developmental stage. According to Doré et al. (2022), adolescents aged 14–15 engage in physical activity primarily for enjoyment, competence, personal ability, and social interaction. Interestingly, appearance-related motives were not found to be significant. These findings demonstrated a strong correlation between physical activity and mental health in this age group. A Canadian study further confirmed that adolescents who engaged in at least one hour of physical activity per day experienced, on average, a 2 % increase in mental well-being per day of activity (Bélanger et al., 2019). These results underscore the potential for improving youth mental health by promoting physical activity and reinforcing motivational factors for engagement from an early age (Doré et al., 2022).

Among university students, motivations for engaging in physical activity differ markedly from those of adolescents and are more strongly influenced by societal norms. Factors such as gender, intensity of exercise, and type of activity play a central role. Recent studies show that this population has a higher prevalence of mental health issues and also exhibits greater levels of physical inactivity. Importantly, data reveal a positive relationship between higher levels of physical activity and improved mental health outcomes in this age group (Rodríguez-Romo et al., 2023). Despite widespread awareness of the benefits of physical activity on mental health, more than one-third of adults in high-income countries fail to meet recommended activity levels (Hernández-Pizarro & Maynou, 2024). For many adults, the primary motivator for physical activity is stress reduction. Stress is a key determinant of mental health throughout adolescence and adulthood, and its accumulation over short periods is associated with increased physical activity levels as a coping mechanism (Almeida et al., 2020). As individuals age, mental health becomes increasingly intertwined with physical, environmental, and social factors—ranging from musculoskeletal pain and functional decline to social isolation (WHO, 2022).

Although physical activity is a major contributor to improved mental health, it is not the sole determinant of mental health. Nevertheless, the interconnection between physical activity and psychological well-being is unequivocal.

Methodology

This study applies the salutogenic model within the specific occupational context of the Czech Armed Forces, with a focus on both male and female service members. The primary objective is to evaluate the relevance, adaptability, and diagnostic value of Aaron Antonovsky's salutogenic framework—particularly its core dimensions: comprehensibility, manageability, and meaningfulness—as they relate to mental and physical resilience among military personnel. The methodological design builds upon a diagnostic tool originally introduced by Sedláková and Kovářová (2025). This instrument has been adapted and modified for application in military settings, ensuring its alignment with the professional demands, psychosocial conditions, and stressors characteristic of military service. Special attention was paid to the hierarchical structure, exposure to operational stress, and the dual expectations of physical performance and psychological endurance in the armed forces.

The adapted tool is designed to assess the three central components of the salutogenic model in a way that reflects the unique experience of soldiers. It provides a structured and research-based method for evaluating how well service members understand, manage, and find meaning in their roles and challenges within military life. This methodological approach aims not only to generate relevant empirical data but also to support the practical implementation of resilience-building strategies and mental health monitoring in armed forces contexts. The results of this model application are intended to contribute to both academic insight and evidence-based military personnel management.

3. Results and Discussions

The analysis confirms the need to modify Antonovsky's salutogenic model to reflect the specific context of military service in the Armed Forces of the Czech Republic. The adapted model identifies four key domains: operational and systemic stressors, generalized resistance resources (GRRs), coping strategies, and the sense of coherence (SOC) itself—redefined to align with the value framework and psychological demands of professional soldiers. Results show that a higher SOC level is associated with a lower incidence of PTSD, depression, anxiety, and burnout. Physical activity emerges as a dual-function factor—supporting both physical readiness and mental well-being—with strong links between long-term motivation for physical activity and psychological resilience, particularly when established in adolescence. Despite these positive associations, the study highlights systemic barriers such as low awareness of psychological support, persistent stigma surrounding mental health, and the absence of a structured reintegration system. Consequently, recommendations include revising training and education programs to intentionally strengthen SOC, implementing continuous mental health monitoring throughout the service cycle, and developing comprehensive psychological and social support systems tailored to the realities of military life. The modified model is scheduled for empirical testing on a sample of 300 Czech Army personnel, selected to ensure representation across ranks, genders, age groups, and service duration. The primary objective of this follow-up study is to verify the practical applicability and validity of the adapted model within the military context and to refine strategic recommendations for sustaining resilience and well-being in armed forces personnel. The results confirm the relevance of adapting Antonovsky's salutogenic model to the specific conditions of military service in the Czech Armed Forces. The modified model incorporates military-specific stressors, resistance resources, coping strategies, and a tailored sense of coherence. Higher SOC levels are associated with better mental health outcomes, and physical activity supports both physical readiness and psychological resilience. However, persistent systemic barriers—such as mental health stigma and insufficient reintegration support—must be addressed.

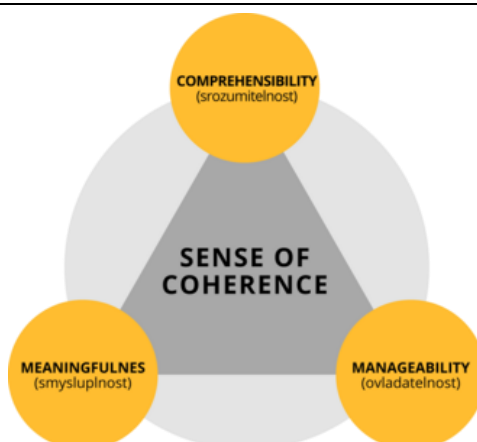


Figure 1. Sense of Coherence Model (Comprehensibility, Manageability, Meaningfulness)

(Antonovsky 1980, 16)

(Source: Antonovsky)

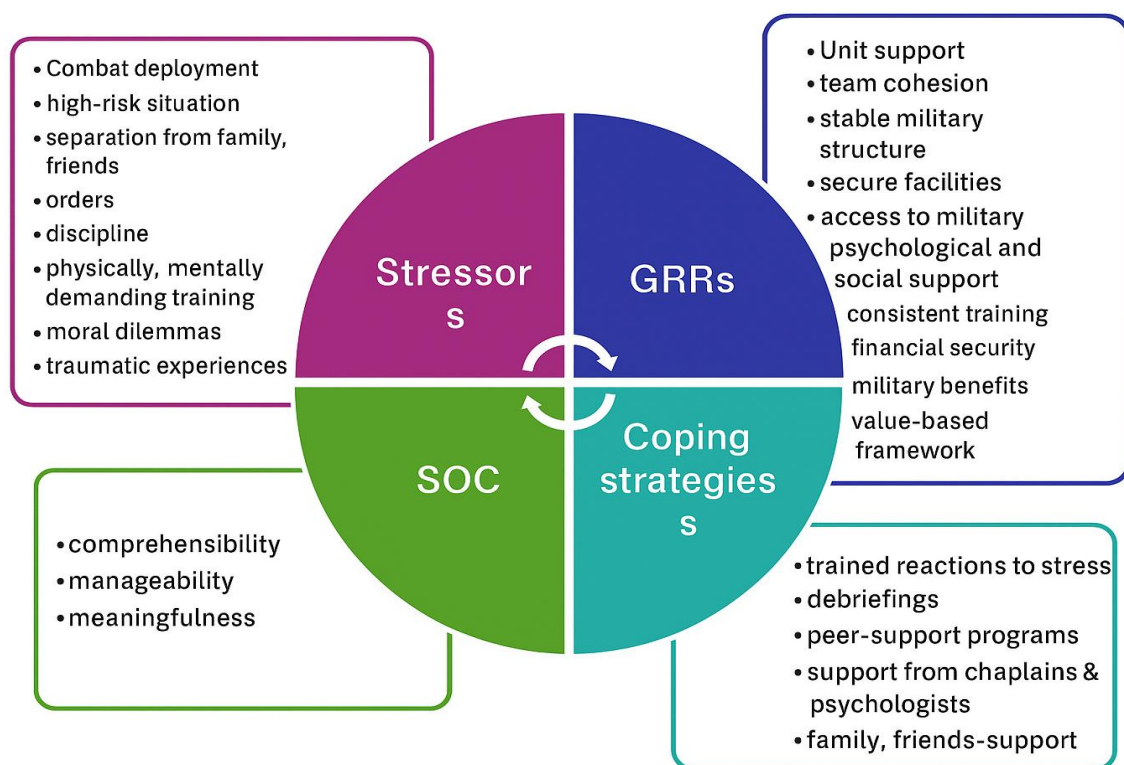


Figure 2. Health as a continuum

(Own elaboration and adaptation of Antonovsky's model by the author)

(Source: own, Antonovsky 1980, 16)

4. Conclusions

Based on the summarization, compilation, and comparison of relevant literature, as well as the original model by Sedláková and Kovářová (2025), it is evident that the salutogenic approach must be adapted to suit the specific environment of the Armed Forces of the Czech Republic. Professional soldiers are exposed to a long-term and structurally distinct set of physical and psychological stressors compared to the general population. It is essential to consider not only chronic exposure to stress but also the high-risk and mentally demanding nature of military service, which includes combat deployment, separation from family, strict hierarchical structures, continuous discipline, and physically and mentally intensive training.

The analysis shows that the concepts of chronological, mental, and physical age are interrelated in this environment, and understanding these aspects are crucial for effective human resource management, training design, health care, and stress prevention. Aaron Antonovsky's salutogenic model—built on the three core components of comprehensibility, manageability, and meaningfulness—offers a useful framework for understanding individual resilience. However, the military context requires modifications of these dimensions to reflect its specific characteristics, as indicated by both the present research and comparative studies.

The modified model applied to the Czech Armed Forces distinguishes four key domains. The first comprises stressors such as combat deployment, separation from family, moral dilemmas, the psychological and physical demands of training, hierarchical command structures, and the necessity of unconditional obedience. The second domain includes generalized resistance resources (GRRs), such as unit support, team cohesion, structural stability, access to healthcare and psychological services, physical readiness, financial security, and a value-anchored framework. The third domain concerns coping strategies, such as stress management training, debriefings, peer support, access to chaplains and psychologists, and family or social support. The fourth domain involves the sense of coherence (SOC) itself, which must be tailored to the military environment and its value system, with emphasis placed on strengthening soldiers' understanding of their mission, ability to cope with challenges, and capacity to derive meaning from their service.

Findings confirm that a higher level of SOC is associated with lower incidence of post-traumatic symptoms, depression, anxiety, and burnout. Physical activity, an integral component of military life, plays a dual role—serving both as a means of maintaining physical readiness and as a significant factor in mental health support. Long-term studies show that motivation for physical activity, often shaped during adolescence, strongly correlates with mental well-being. Among adult soldiers, physical activity increasingly functions as an effective coping strategy for managing stress.

Nevertheless, systemic barriers remain. These include limited awareness of available psychological support, persistent stigma surrounding mental health issues, and the lack of a structured reintegration system following mission return or discharge. It is precisely in these transitional phases that the salutogenic model proves essential—helping soldiers to regain a sense of comprehensibility, manageability, and meaningfulness within a changed life context.

Several recommendations arise from these findings. Training and educational programs should be revised to deliberately develop the components of the sense of coherence. Mental health monitoring must be systematically embedded throughout all stages of the service cycle—from recruitment to transition into civilian life. Furthermore, a comprehensive psychological, social, and reintegration support system needs to be established, one that reflects the specific demands of military service. Physical activity should be promoted not only as a performance element but also as a preventive and therapeutic tool for mental health care.

The adaptation of the salutogenic model for professional soldiers offers a comprehensive framework for enhancing psychological resilience, ensuring physical and mental balance, supporting operational performance and sustaining human potential in the Czech armed forces in the long term.

As part of future research, the modified model will be applied to a sample of 300 members of the Czech Armed Forces. The study will aim for balanced representation across ranks, genders, age groups, and service durations—from newly enlisted personnel to seasoned professionals with years of experience. The objective

is to verify the practical applicability of the model, identify key factors contributing to the development of the sense of coherence, and further refine recommendations for systemic support of mental health and resilience within the military environment. Simultaneously, the study will assess the validity of the model in its modified form, with direct reference to the military context and the specific variables inherent in military life.

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