

## EXTRAVERSION, CONSCIENTIOUSNESS AND NEUROTICISM AS PREDICTORS OF SPORT MOTIVATION IN MILITARY PHYSICAL EDUCATION: A THEORETICAL-CONCEPTUAL FRAMEWORK WITH A SALUTOGENIC PERSPECTIVE

Dumitru Cătălin COHAL

“Nicolae Bălcescu” Land Forces Academy, Sibiu, Romania  
[cohalcatalin@gmail.com](mailto:cohalcatalin@gmail.com)

**Abstract:** *This paper proposes a theoretical-conceptual framework that examines how two central personality traits, Extraversion and Conscientiousness, influence sport motivation within the context of Military Physical Education (MPE), and how stress vulnerability, as an expression of Neuroticism, moderates this relationship. Grounded in the Five-Factor Model (Big Five), Self-Determination Theory (SDT), and Antonovsky’s salutogenic paradigm, the study identifies Extraversion and Conscientiousness as positive predictors of intrinsic and extrinsic motivation, respectively, while Neuroticism is conceptualized as a moderating factor that amplifies stress reactivity and, through this mechanism, diminishes motivational efficiency. The paper proposes a moderated mediation model in which sport motivation mediates the relationship between personality traits and active engagement in Military Physical Education, while perceived stress, amplified by high levels of Neuroticism, functions as a moderating variable. A holistic approach to Military Physical Education, integrating the physical, psychological, and social dimensions of training, is advanced as the foundation of an instructional system oriented toward health promotion and resilience building. Conceptual definitions, theoretical relationships, and practical implications for the military context are discussed. The proposed model constitutes a theoretical basis for future empirical investigations.*

**Keywords:** motivation, military sports, personality traits, salutogenesis, holistic

### 1. Introduction

In an operational environment where resilience and physical performance constitute essential pillars of mission success, understanding the psychological determinants of Military Physical Education (MPE) is of crucial importance. Beyond mere health maintenance, regular physical exercise in the military context is intrinsically linked to operational effectiveness and combat readiness. The interaction between personality traits and sport motivation represents a fundamental determinant in achieving and sustaining optimal combat preparedness [1]. Although military organizations seek standardized physical fitness outcomes, individual

variability remains a significant factor: military personnel are, first and foremost, individuals whose commitment to physical education is mediated by distinct personality profiles [1]. Within military organizations, Military Physical Education exceeds the status of a lifestyle option and is regarded as an essential operational requirement. Consequently, maintaining high levels of motivation for continuous training must remain a strategic priority for military leadership.

A particularly relevant paradigm for grounding a holistic approach to Military Physical Education is salutogenesis, as conceptualized by Aaron Antonovsky [2]. In contrast to traditional pathogenic models

focused on identifying and eliminating risk factors, the salutogenic paradigm emphasizes the resources that enable individuals to maintain and promote health under conditions of adversity. The central concept of this theory, the Sense of Coherence (SOC), describes an individual's capacity to perceive stressors as comprehensible, manageable, and meaningful, a psychological resource with direct implications for Military Physical Education. From a salutogenic perspective, it is not sufficient merely to eliminate stressors from the instructional process; rather, it is necessary to actively strengthen military personnel's capacity to cope with these stressors and to derive meaning from sustained physical effort [2, 20].

The motivation underlying continuous participation in physical education is structured along two primary dimensions: intrinsic motivation and extrinsic motivation. Intrinsic motivation is rooted in personal satisfaction, autonomy, and the inherent enjoyment of physical effort. Extrinsic motivation, by contrast, is primarily driven by the rigorous demands of the military environment, such as the requirement to pass standardized physical fitness tests or avoid regulatory sanctions. Empirical evidence suggests that individuals who engage in physical activity for intrinsic reasons exhibit lower stress responses and greater long-term resilience [19].

This cognitive appraisal of physical effort is filtered through dominant personality traits. Among the Big Five dimensions, Extraversion and Conscientiousness are particularly relevant. The former facilitates social engagement and energetic participation in training, while the latter supports disciplined adherence to preparation protocols. A third trait, Neuroticism, does not function as a direct predictor of motivation in this model; rather, it operates as a moderating factor by amplifying perceived stress and thereby reducing the effectiveness of motivational processes [11, 12].

This paper delineates a theoretical framework through which Extraversion, Conscientiousness, and Neuroticism, through its role in stress amplification, modulate motivational typologies in Military Physical Education. It also proposes an integrated conceptual model that harmonizes personality-based approaches with the salutogenic perspective and with professional alignment to a military career, thereby contributing to a more comprehensive understanding of the factors that sustain long-term engagement in Military Physical Education and prevent career abandonment. The proposed model constitutes a theoretical framework to be tested in future empirical research.

## **2. Theoretical Framework of Research Variables**

The study of personality in contemporary psychology is dominated by the Five-Factor Model (Big Five), which categorises human personality into five fundamental dimensions: Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness to Experience [10]. Developed and validated by Costa and McCrae, this model is widely employed due to its stability and predictive power across diverse contexts, including the military. Within this model, Extraversion and Conscientiousness are identified as the primary predictors of physical performance and sport motivation, while Neuroticism is considered for its moderating role through its relationship with stress vulnerability. The remaining traits Agreeableness and Openness to Experience are not included in the present model, as their inclusion would introduce uncontrolled variance without a solid theoretical justification in this specific context.

### **2.1. Sport Motivation and the Salutogenic Paradigm**

Motivation encompasses the internal and external processes that initiate, direct, and sustain goal-oriented behaviour. A cornerstone of this domain is Self-Determination Theory (SDT), developed by

Deci and Ryan, which distinguishes between intrinsic motivation (engaging in an activity for its inherent pleasure or satisfaction) and extrinsic motivation (engagement driven by external factors such as rewards, recognition, or obligations) [19]. According to SDT, optimal behavior occurs when three fundamental psychological needs are satisfied: Autonomy, Competence, and Relatedness.

Applying these variables to the athletic domain, motivation serves as the central determinant for initiating and sustaining long-term physical activity. Studies indicate that intrinsically motivated athletes exhibit lower dropout rates and cope more effectively with competitive stress [9]. A direct correlation exists between motivation and constructs such as self-efficacy, psychological resilience, and emotional regulation [16, 21]. This is a particularly desirable state in the military environment. Integrating the salutogenic perspective [2] into the understanding of sport motivation within Military Physical Education adds an essential dimension: it is not sufficient for military personnel to be extrinsically motivated through institutional obligations; the Military Physical Education system must actively cultivate a Sense of Coherence toward physical effort. Military personnel should be trained such that the perception of military instruction is accepted as meaningful, comprehensible, and manageable. This salutogenic orientation transforms Military Physical Education from an instrument of compliance into a vector for long-term health promotion and resilience building [2, 20, 22]. Key determinants of sport motivation include personality traits, motivational climate, personal goals, and prior experiences of success or failure. In high-performance contexts, motivation determines the individual's relationship with effort intensity and their capacity to recover after failure or physical exhaustion. Consequently, military athletic performance depends not only on functional abilities but also on the underlying motivational

typology, sustained by the individual's salutogenic resources.

## **2.2. Military Personality and the Holistic Approach to Military Physical Education**

Military personality is a complex set of psychological traits an adaptive structure shaped by dynamic, high-pressure environments characterized by rigorous discipline, self-control, physical and psychological endurance, team spirit, courage, and initiative, within a strict hierarchy and chronic exposure to stress [3, 4]. From a psychological perspective, traits such as Extraversion and Conscientiousness are not static; they are consolidated through training. In this regard, Military Physical Education does not merely develop functional capacity, it serves as a binding agent for psychological attributes such as resilience, self-control, and perseverance.

A holistic approach to Military Physical Education integrating the physical, psychological, social, and spiritual dimensions of preparation, is essential for developing a well-rounded and socially adapted military professional. This holistic perspective, grounded in the salutogenic paradigm [2], transcends the framework of instruction oriented exclusively toward physical performance and includes: consolidation of psychological well-being, promotion of group cohesion, support for personal meaning in the military profession, and cultivation of the internal resources necessary to face operational challenges [20, 22, 23]. Unlike civilian physical activity, military sport motivation tends more toward the extrinsic, due to institutional regulations and imposed performance standards. Nevertheless, research suggests that Military Physical Education reaches peak efficiency when extrinsic requirements are internalized, becoming congruent with the individual's personal values [19]. In this internalization process, the Military Physical Education specialist plays a central pedagogical role: not merely as a physical fitness trainer, but as an agent of a holistic-salutogenic approach that supports the

integral development of military personnel. Physical training thus acquires the dimension of coaching, placing emphasis on maximizing the physical and psychological potential of the military professional, on personal development by finding the best training solutions from within the individual.

### **2.3. Extraversion, Conscientiousness, and Neuroticism in the Context of Military Physical Education**

In the proposed model, two Big Five traits function as independent predictors of sport motivation within Military Physical Education, while the third operates as a moderating factor through its relationship with perceived stress:

- *Extraversion* manifests in the military environment through the soldier's capacity to rapidly integrate into group structures, to respond energetically to collective physical demands, and to sustain subunit cohesion. The extraverted military professional does not perform in isolation, they activate within the context of the team, inter-unit competition, and the dynamics of group instruction. This social orientation fosters intrinsic motivation through the enjoyment of shared effort and, simultaneously, consolidates unit cohesion, an essential operational dimension, not merely an abstract value [8, 15]. In military instruction, extraversion transforms individual training into a collective engagement with direct tactical value.

- *Conscientiousness* represents, in the military context, the foundation of adherence to daily orders, instructional protocols, and institutionally imposed physical fitness standards. The conscientious military professional does not require constant supervision to maintain their training schedule they internalise the regulatory requirement as part of their professional identity. This trait correlates positively with the establishment of physical performance goals and with self-imposed long-term discipline [7, 16]. Conscientiousness is the mechanism through which extrinsic motivation initially

generated by institutional obligations gradually transforms into vocational commitment to the military profession.

- *Neuroticism* concerns, within military instruction, the tendency of certain military personnel to react disproportionately to the pressures specific to the operational environment: extreme physical demands, uncertainty, periodic physical fitness assessments, or a tense subunit climate. The military professional with high Neuroticism is not, by definition, a weak performer however, they are more vulnerable to the amplification of perceived stress under conditions of institutional pressure [11, 12]. In the proposed model, Neuroticism moderates the relationship between motivation and behavioral engagement in Military Physical Education: when perceived stress exceeds the tolerance threshold a heightened risk for military personnel with pronounced Neuroticism, motivation erodes and demotivation becomes a probable consequence [12, 18]. From a salutogenic perspective, the military professional with high Neuroticism and low Sense of Coherence presents the highest risk of demotivation and behavioural dropout in the context of Military Physical Education and therefore constitutes a priority for intervention by the Military Physical Education specialist through coaching.

It is essential to maintain the theoretical distinction between Neuroticism and perceived stress. Neuroticism is a stable personality trait, not a situational state; it does not equate with distress and must not be treated as such in military instructional practice. Where distress appears in the model, it is operationalised as perceived stress a situational construct influenced by Neuroticism, but irreducible to it.

### **3. Conceptual Framework**

Through a theoretical-conceptual approach, we have identified, defined, and organised the relational structure of relevant constructs drawn from the psychological literature, from the domain of Military Physical

Education, and from the salutogenic paradigm. The applied method corresponds to conceptual identification and theoretical integration. The relevant constructs are defined, the relationships among them are proposed on the basis of existing theoretical and empirical literature, and a preliminary moderated mediation model is thus formulated. This model constitutes a hypothesis and is not empirically validated in the present work. Empirical validation, including through Structural Equation Modelling (SEM) or other analytical approaches, is identified as the necessary next step and is recommended for future research.

The objectives of this conceptual analysis are:

- a. Clarifying the theoretical roles of Extraversion and Conscientiousness as predictors of sport motivation in the context of Military Physical Education.
- b. Establishing the distinction between Neuroticism as a personality trait and perceived stress as a situational moderator.
- c. Integrating the salutogenic perspective and the holistic approach to Military Physical Education within the proposed model.
- d. Proposing a coherent moderated mediation model for future empirical investigations.
- e. Deriving applied implications for Military Physical Education practice from a holistic and salutogenic perspective.

#### **4. Proposed Moderated Mediation Model**

The proposed model explores the dynamics of Military Physical Education through the following structural components, each theoretically justified and internally consistent:

A. Independent Variables (Predictors): Extraversion and Conscientiousness. These two traits were selected because the existing literature provides a coherent theoretical basis for their direct influence on sport motivation in Military Physical Education

[7, 8, 14, 15]. The remaining Big Five dimensions were deliberately excluded to maintain the parsimony of the model and avoid the introduction of uncontrolled variance.

B. Mediating Variable: Sport Motivation (Intrinsic and Extrinsic). Motivation is proposed as the mechanism through which personality traits influence training behavior within Military Physical Education [9, 19]. Extraversion is expected to correlate primarily with intrinsic motivation, while Conscientiousness is expected to correlate with extrinsic motivation that progressively internalizes.

C. Dependent Variable: Active Engagement and Military Physical Performance. This represents the behavioral outcome of the model observable training behavior and measurable physical output in the context of Military Physical Education, including through the lens of methodologies specific to relevant military competitions such as the Military Pentathlon [6].

E. Moderating Variable: Perceived Stress. High levels of perceived stress are hypothesised to reduce the extent to which motivation translates into active engagement. Neuroticism, as a personality trait, is expected to amplify stress perception, functioning thus as an indirect trait-level moderator, while perceived stress operates as the direct moderating variable in the model [11, 12, 18].

The relationships proposed within the model are as follows: Extraversion and Conscientiousness positively influence sport motivation (intrinsic and extrinsic, respectively); motivation mediates the relationship between these personality traits and active engagement in Military Physical Education; and perceived stress moderates the path from motivation to engagement, such that high stress weakens this relationship. Neuroticism functions as an antecedent factor that increases the likelihood of high perceived stress, without itself being a structural component of the model.

From a salutogenic perspective [2, 20], the model is complemented by the individual's General Resistance Resources (GRRs) — which generally include: social support, unit cohesion, professional training, and personal values. As factors mediating the relationship between perceived stress and the Sense of Coherence, a holistic approach to Military Physical Education should explicitly target the consolidation of these resources, not merely the improvement of raw physical performance [20, 22, 23]. This model is presented as a theoretical hypothesis. Its structural relationships require empirical validation through methods such as SEM applied to data collected from a representative military sample, using validated psychometric instruments for each construct. Such validation exceeds the scope of the present conceptual work and constitutes the primary agenda for future research.

Moderated Mediation Model – Military Physical Education (MPE)

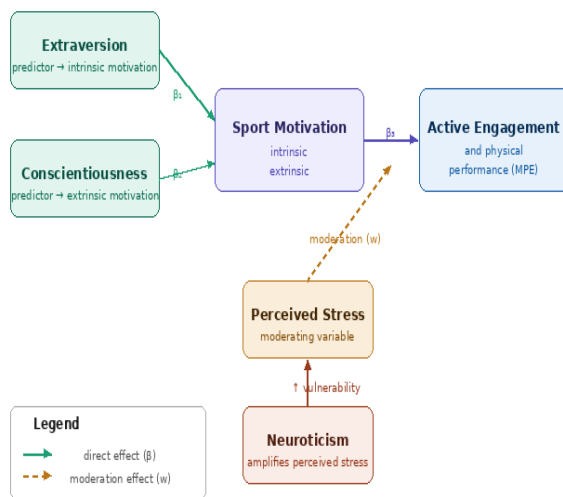


Figure 1. Proposed moderated mediation model of sport motivation in Military Physical Education.

*Figure 1. Proposed moderated mediation model of sport motivation in Military Physical Education (MPE). Extraversion ( $\beta_1$ ) and Conscientiousness ( $\beta_2$ ) predict Sport Motivation, which mediates Active Engagement ( $\beta_3$ ). Perceived Stress moderates the motivation-to-engagement path ( $w$ ). Neuroticism amplifies perceived stress at the trait level.*

## 5. Discussion

The proposed conceptual model reinforces the importance of integrating personality traits in explaining motivational behaviour and military personnel engagement with Military Physical Education. Extraversion and Conscientiousness are identified as theoretically grounded predictors of intrinsic and extrinsic motivation, respectively, while Neuroticism occupies a distinct moderating position through its documented relationship with stress reactivity [11, 12]. Neuroticism is not necessarily equivalent to stress vulnerability, nor synonymous with distress. Neuroticism is a personality trait characterized by negative affect and emotional reactivity; it accentuates a person's vulnerability to stress but is not the sole factor involved in determining stress responsiveness [12]. Perceived stress, by contrast, is a situational construct that reflects the individual's appraisal of demands relative to their coping resources. The two constructs are empirically correlated but theoretically distinct, and this distinction is maintained throughout the present model.

Extraversion is expected to be positively associated with active engagement in Military Physical Education. Extraverted personnel tend to exhibit higher levels of energy, sociability, and openness to demanding group activities, which facilitates voluntary participation [8, 15]. Conscientiousness is expected to function as a robust predictor of consistent engagement and performance, through superior organization, self-discipline, and goal orientation [7, 16]. High Neuroticism, by increasing susceptibility to perceived stress, is expected to weaken the path from motivation to avoidance behaviour or demotivation. Integrating the salutogenic paradigm into the discourse on Military Physical Education offers a complementary lens, shifting the emphasis from the pathogenic perspective toward the salutogenic one. This shift in perspective is essential for designing Military Physical

Education programmes that are not limited to compliance and sanction avoidance, but actively build resilience, cohesion, and provide professional meaning to activities [2, 20, 22].

From an applied perspective, the theoretical model and the proposed holistic perspective suggest several practical implications:

a. Military Physical Education programmes should be differentiated according to personnel personality profiles. Individuals with high Extraversion may benefit from competitive and group training environments, while those with high Conscientiousness may respond well to individualised goal-setting frameworks [7, 15].

b. Strategies for stimulating and consolidating intrinsic motivation — such as coaching, autonomy-supportive instruction, and progress-focused feedback — should be systematically integrated into Military Physical Education, in accordance with SDT principles [19] and the salutogenic perspective [2].

c. Stress management interventions should be implemented as a complement to Military Physical Education, with particular attention to individuals exhibiting elevated stress reactivity, regardless of its personality-based origins. A holistic approach to Military Physical Education mandatorily includes this component [20, 22, 23].

d. Military Physical Education specialists must be trained not merely as coaches or sport teachers in the classical sense, but also as health promoters through sport, capable of identifying the individual resources of military personnel and leveraging them in the instructional process [6, 22].

## **6. Limitations and Future Research Directions**

The primary limitation of this study lies in its exclusively theoretical nature. No data were collected, no instruments were administered, and no hypotheses were statistically tested. The presented model remains at the level of a theoretical proposal and cannot generate causal conclusions. All

statements regarding expected relationships between variables must be interpreted as theoretical predictions, not empirical findings.

Future research should address these limitations through:

- Collecting empirical data using validated psychometric instruments for each construct including validated Sense of Coherence (SOC) scales and perceived stress scales applied to a representative military sample.

- Structural Equation Modelling (SEM) to test the moderated mediation structure of the proposed model, including the role of salutogenic variables.

- Longitudinal designs to capture the temporal evolution of motivation, stress, and physical performance across Military Physical Education training cycles.

- Inclusion of additional moderators such as social support, perceived organisational climate, psychological resilience, and General Resistance Resources (GRRs) from the salutogenic model.

- Comparative analyses across military specialisations, rank levels, and operational contexts, including comparisons with results from the Military Pentathlon and detailed analyses of the five disciplines of this exceptional sport [6].

- Evaluation of the effectiveness of holistically and salutogenically oriented Military Physical Education programmes, compared with traditional programmes oriented exclusively toward performance.

## **7. Conclusions**

This paper proposes a theoretically grounded moderated mediation model in which Extraversion and Conscientiousness predict sport motivation, which in turn mediates active engagement in Military Physical Education, moderated by perceived stress. Neuroticism is distinguished from perceived stress and repositioned as a trait-level factor that amplifies stress reactivity, rather than a direct component of the structural model. By integrating the salutogenic paradigm and the holistic perspective on Military Physical

Education, the model extends traditional frameworks based exclusively on performance, proposing a military instructional system oriented toward the active promotion of health, resilience, and individual understanding of professional meaning. A holistic approach to Military Physical Education combining physical preparation with psychological support, social cohesion, and cultivation of the Sense of Coherence represents the necessary direction of evolution for contemporary military systems.

By maintaining conceptual precision distinguishing between personality traits (Extraversion, Conscientiousness, Neuroticism), motivational mechanisms (intrinsic and extrinsic sport motivation), behavioural outcomes (active engagement

and military physical performance), and situational moderators (perceived stress) the proposed model offers a coherent and internally consistent framework for future empirical investigations.

Military physical performance is the result of a multifactorial interaction between personality, motivation, and stress, and not of any single isolated factor. The role of the Military Physical Education specialist thus acquires new dimensions, and the outcomes of military personnel in MPE will depend on their capacity to adopt a holistic and salutogenic approach, evidence-informed and scientifically grounded. The present framework constitutes a first step toward operationalising this approach in Military Physical Education practice.

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