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Exploring the Trait of Neuroticism in University-Level Endurance Athletes Using the Big Five Inventory

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Abstract: ***This study aimed to assess the levels of neuroticism among university-level endurance athletes using the Big Five Inventory (BFI). A total of 60 athletes, including both male and female participants engaged in endurance sports such as long-distance running, swimming, cycling, and triathlon, were surveyed using the neuroticism subscale of the BFI. The research employed a quantitative, cross-sectional, descriptive design, and the data were analyzed using descriptive statistics. Results indicated that the mean neuroticism score was 22.8 (SD = 5.6), with scores ranging from 12 to 35. Categorization based on percentile ranks showed that 23.3% of athletes had low neuroticism, 55% moderate, and 21.7% high levels. The findings suggest that while most university endurance athletes maintain a moderate level of emotional stability, a significant minority exhibit elevated neurotic tendencies, which may affect stress management and psychological resilience. These results highlight the need for integrating psychological support and emotional regulation training in athletic development programs, especially for those at risk of high emotional instability.***

Keywords: Neuroticism, Endurance Athletes, Big Five Inventory (BFI), University Athletes, Sport Psychology, Personality Traits, Emotional Stability

I. INTRODUCTION

In recent years, there has been growing interest in the psychological characteristics that influence athletic performance, resilience, and well-being. Among the key personality traits studied, neuroticism—a tendency to experience negative emotions such as anxiety, irritability, and emotional instability—has gained attention due to its potential impact on stress response, coping mechanisms, and consistency in performance. While neuroticism has been extensively explored in general populations, its role within endurance sports remains under-investigated, particularly in the context of university-level athletes, who face both academic and athletic pressures. Endurance sports sch as long-distance running, cycling, swimming, and triathlon demand sustained physical effort, psychological perseverance, and emotional regulation over extended periods. These requirements make endurance athletes a particularly relevant group for examining how personality traits influence performance and mental health outcomes. High levels of neuroticism may impair an athlete's ability to cope with the stress and fatigue inherent to such sports, potentially increasing vulnerability to burnout, performance anxiety, and poor recovery. The Big Five Personality Model (Costa & McCrae, 1992) provides a well-established framework for assessing personality traits, including neuroticism. This model has been widely validated across cultures and populations and remains one of the most reliable tools in personality psychology. The current study utilizes the Big Five Inventory (BFI) to assess neuroticism levels among a sample of 60 university-level endurance athletes, aiming to identify patterns and possible correlations with demographic or performance-related variables.

This study seeks to contribute to the growing field of sport psychology by offering insights into the personality profile of endurance athletes, with particular emphasis on the neuroticism dimension. Understanding these psychological factors can inform tailored mental training, coaching strategies, and interventions to promote optimal performance and psychological well-being.

II. METHODOLOGY

This study employed a quantitative, cross-sectional, descriptive research design to examine the levels of neuroticism among university-level endurance athletes. A total of 60 participants, both male and female, actively engaged in endurance sports such as long-distance running, swimming, cycling, and triathlon were selected through purposive sampling, targeting individuals with at least one year of competitive university-level experience.

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Personality assessment was conducted using the Big Five Inventory (BFI) developed by John, Donahue, and Kentle (1991), a 44-item self-report questionnaire that measures five core personality traits, with neuroticism as the primary focus in this study. The neuroticism subscale includes statements such as *"I worry a lot," "I get nervous easily,"* and *"I remain calm in tense situations"* (reverse scored), rated on a 5-point Likert scale from 1 (Disagree strongly) to 5 (Agree strongly). The neuroticism scores were obtained by summing relevant items after applying reverse scoring where necessary. Data collection was conducted over a period of four weeks through both in-person and digital administration, with informed consent obtained and confidentiality assured. For analysis, only descriptive statistical methods were employed, including calculations of mean, standard deviation, and frequency distributions to summarize and interpret the neuroticism levels within the sample.

III. RESULTS

The purpose of this study was to examine the levels of neuroticism among university-level endurance athletes using the Big Five Inventory (BFI). Data were analyzed using descriptive statistics including measures of central tendency and variability.

A. Neuroticism Score Distribution

Out of the total 60 participants, neuroticism scores ranged from 12 to 35 on the BFI subscale. The mean neuroticism score was 22.8 with a standard deviation (SD) of 5.6, indicating a moderate overall level of neuroticism among the sample. The minimum score observed was 12, and the maximum was 35.

Table 1: Descriptive Statistics

Statistic	Value
N (Sample Size)	60
Mean Score	22.8
Standard Deviation	5.6
Minimum Score	12
Maximum Score	35

B. Categorization of Neuroticism Levels

To better interpret the findings, neuroticism scores were categorized into three levels based on percentile cutoffs:

- Low (≤ 20th percentile): Scores 12–18
- Moderate (21st–80th percentile): Scores 19–27
- High (≥ 81st percentile): Scores 28 and above

Based on this classification:

Table 2

Neuroticism Level	Number of Athletes	Percentage (%)
Low	14	23.3%
Moderate	33	55.0%
High	13	21.7%

The majority of athletes (55%) fell into the moderate neuroticism range, while approximately 21.7% exhibited high neuroticism, suggesting a substantial portion of endurance athletes experience elevated emotional instability.

IV. DISCUSSION

The primary objective of this study was to examine the levels of neuroticism among university-level endurance athletes using the Big Five Inventory (BFI). The findings revealed that the mean neuroticism score among the 60 participants was 22.8, with scores ranging from 12 to 35. This suggests a moderate overall level of neuroticism in the sample, with some variability in emotional stability among athletes. The categorization of scores further indicated that 55% of the athletes fell into the moderate neuroticism range, while 23.3% were classified as low, and 21.7% as high in neuroticism.

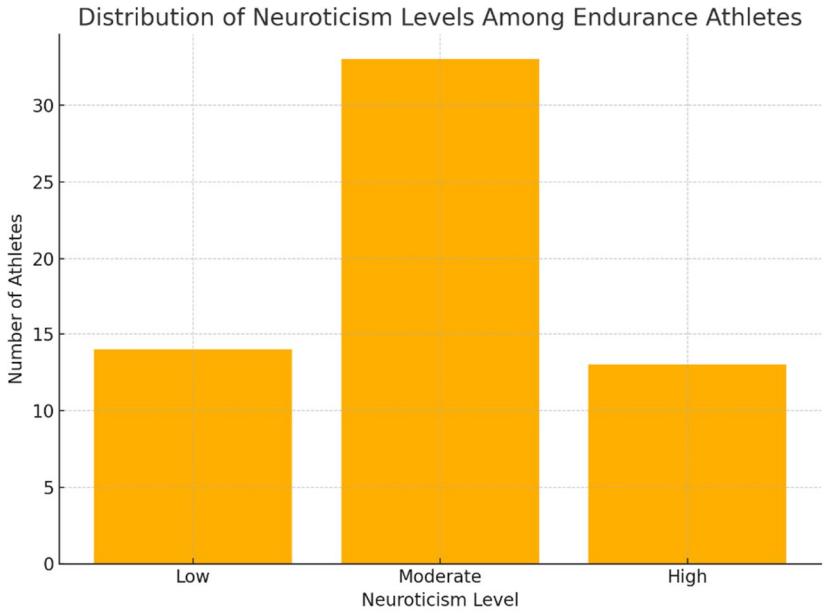
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This distribution suggests that although most endurance athletes exhibit balanced emotional traits, a notable portion (over one-fifth) may be prone to emotional instability, including tendencies toward anxiety, worry, and mood swings. These psychological traits could have meaningful implications for how these athletes handle the mental and physical demands of endurance sports.

These results align with previous findings in sport psychology, where neuroticism has been associated with greater susceptibility to performance anxiety, mental fatigue, and stress reactivity (Allen, Greenlees, & Jones, 2013). Endurance sports in particular demand sustained mental focus and emotional regulation, which can be compromised in athletes with higher levels of neuroticism. Moreover, elevated neuroticism may also increase the risk for burnout, reduced motivation, and difficulty recovering from setbacks, all of which are critical concerns in the context of competitive university athletics. It is also important to note that while a moderate level of neuroticism can occasionally serve as a motivational factor—leading athletes to prepare more thoroughly or engage in self-monitoring—excessive neuroticism is generally linked to negative affect and lower psychological resilience (Eysenck, 2012). Therefore, recognizing athletes who fall into the high neuroticism category can allow coaches, sports psychologists, and athletic departments to develop targeted mental skills training and support programs to help these individuals manage stress more effectively.

The use of descriptive statistics in this study provides a clear overview of the distribution of neuroticism within the selected population; however, it also presents a limitation in that no inferential comparisons or correlations were conducted. Further research involving larger, more diverse samples and including inferential analyses could explore how neuroticism relates to actual performance outcomes, injury rates, or coping strategies.

Graph 1: Distribution of Neuroticism Levels Amond Endurance Athletes



This study highlights that while most university-level endurance athletes maintain moderate emotional stability, a significant subgroup may be psychologically vulnerable due to elevated neuroticism. These findings underscore the need for integrated mental health support in athletic training programs, especially for endurance athletes, where both physical stamina and emotional regulation are vital for sustained success.

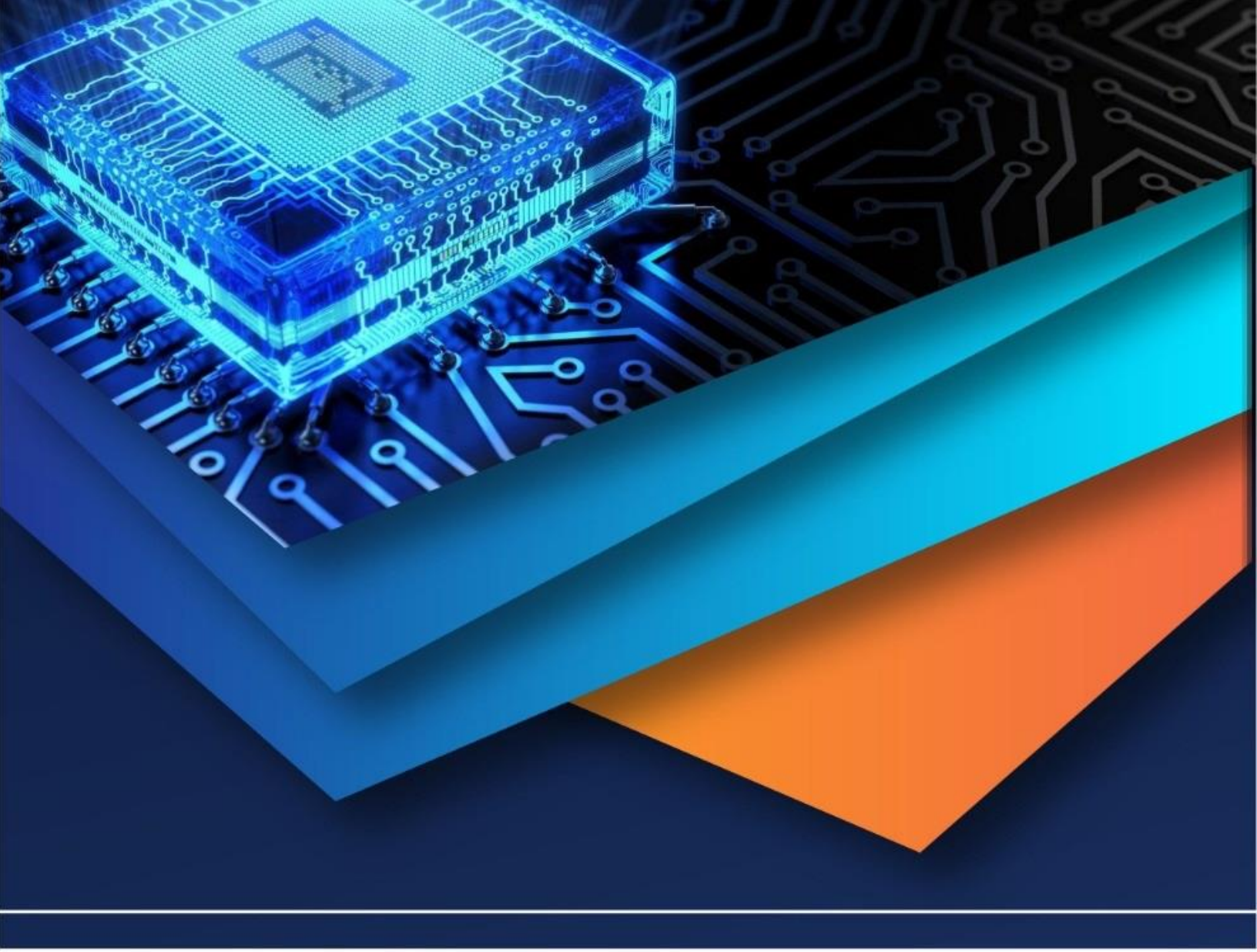
V. CONCLUSION

This study aimed to assess the levels of neuroticism among university-level endurance athletes using the Big Five Inventory (BFI) and descriptive statistical methods. The findings revealed that a majority of participants exhibited moderate levels of neuroticism, while a significant proportion—over 20%—demonstrated high levels, suggesting a heightened vulnerability to stress, anxiety, and emotional instability in this subgroup. These results emphasize the importance of psychological profiling in athletic development, particularly in endurance sports where mental resilience is as crucial as physical performance. While neuroticism does not directly determine athletic success, it may influence how athletes respond to competitive pressure, manage fatigue, and recover from setbacks. Identifying such traits can support the implementation of targeted mental health interventions, stress management strategies, and emotional regulation training within university sports programs.

Given the descriptive nature of this study, future research should consider using inferential statistical methods and larger, more diverse samples to examine how neuroticism correlates with performance outcomes, training adherence, or coping mechanisms. Nonetheless, the present study provides a foundational understanding of the personality traits of endurance athletes and highlights the need for a more holistic approach to athlete development that includes psychological well-being.

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