

A DESCRIPTIVE STUDY OF PERSONALITY DIMENSIONS, SLEEP QUALITY, AND QUALITY OF LIFE AMONG COMPETITIVE ATHLETES

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ABSTRACT

Athletes require strong physical performance and mental resilience to succeed in competitive sports, both closely linked to personality traits, sleep quality, and Quality of Life (QoL). However, how personality and sleep jointly predict QoL domains in competitive athletes remains underexplored. This study evaluated personality dimensions and global sleep quality as predictors of domain-specific QoL among competitive athletes. A quantitative cross-sectional design was used with 500 active competitive athletes (N = 500; age 21–28 years) recruited via purposive sampling. Participants completed the Eysenck Personality Questionnaire (EPQ Adult Hindi Adaptation), Pittsburgh Sleep Quality Index (PSQI), and WHOQOL-BREF. Data were analyzed using descriptive statistics, normality testing, bivariate correlations, and multiple linear regression, with clinical sleep impairment defined as PSQI > 5. Descriptive analysis confirmed univariate normality across psychometric variables. Most athletes (62.6%) showed clinically significant sleep impairment. Physical and social QoL scores were relatively higher, whereas psychological and environmental QoL were lower. Personality traits and sleep quality jointly and significantly predicted domain-specific and overall QoL ($p < 0.05$). Competitive athletes exhibit elevated sleep impairment despite favorable physical QoL. Trait personality and sleep parameters dynamically predict athletic well-being, highlighting the need for targeted sleep-hygiene protocols and sports psychology interventions.

Keywords: Athletes; Eysenck Personality Questionnaire; Pittsburgh Sleep Quality Index; Quality of Life; Sleep Impairment; Sport Psychology; WHOQOL-BREF.

INTRODUCTION

Elite athletic performance demands a continuous synthesis of physical readiness, cognitive adaptability, and psychological recovery. While sports science and athletic conditioning traditionally emphasize physical training, fatigue management, and tactical execution, psychological dimensions specifically personality traits, sleep quality, and perceived Quality of Life (QoL)—frequently determine the threshold between sustained peak achievement and athletic burnout. Among competitive athletes, demanding training schedules, high competition pressure, frequent travel, and performance anxiety routinely disrupt circadian rhythms and psychological equilibrium.

Sleep is a fundamental physiological process vital for neuromuscular recovery, tissue repair, memory consolidation, and neuroendocrine homeostasis. The Pittsburgh Sleep Quality Index (PSQI) is a gold-standard assessment tool, with global scores exceeding 5.00 indicating clinically significant sleep disturbances. Recent research indicates that chronic sleep restriction compromise's reaction time, autonomic regulation, emotional

control, and increases injury susceptibility. However, sleep disturbances in athletic populations do not operate in isolation; they interact dynamically with an individual's underlying trait personality structure.

According to Hans Eysenck's three-factor psychometric framework, personality dimensions Extraversion, Neuroticism, and Psychoticism govern how individuals evaluate competitive stressors, adapt to high-pressure environments, and deploy coping mechanisms. Neuroticism, characterized by emotional instability and heightened stress reactivity, is frequently linked to elevated sleep onset latency and somatic complaints. Conversely, Extraversion is associated with positive affect, social adaptability, and effective recovery practices.

Quality of Life (QoL), as operationalized by the World Health Organization (WHOQOL-BREF), provides a multidimensional framework evaluating Physical Health, Psychological Well-being, Social Relationships, and Environmental Health. Despite the high level of physical conditioning expected of national-level competitive athletes, players frequently report compromised psychological and environmental QoL due to systemic competitive strain, isolation, and career precariousness.

Bivariate associations between personality, sleep, and QoL have been documented separately; empirical research modeling personality traits and sleep quality as joint predictors of multidimensional QoL in a large normative athletic cohort ($N = 500$) remains sparse. To address this empirical gap, this study analyzes the distributional characteristics of these psychometric parameters and evaluates their predictive utility for determining overall Quality of Life among competitive athletes. In this study, QoL refers to domain scores on the WHOQOL-BREF; sleep impairment to $PSQI > 5$; and personality to EPQ Extraversion, Neuroticism, and Psychoticism scores.

Personality Dimensions and Athletic Adaptation

Eysenck's three-factor psychometric model posits that personality dimensions Extraversion (E), Neuroticism (N), and Psychoticism (P) represent biologically based trait dispositions that dictate stress reactivity, coping efficacy, and behavioral regulation (Eysenck & Eysenck, 1975). In athletic contexts, Extraversion is consistently associated with positive affect, sociability, optimism, and proactive coping mechanisms during high-pressure competitions (Allen et al., 2013). Conversely, Neuroticism reflects emotional instability, heightened autonomic arousal, and vulnerability to performance anxiety. Empirical studies indicate that competitive athletes scoring high on Neuroticism tend to perceive training stress as more threatening, leading to maladaptive coping strategies, somatic complaints, and athletic burnout (Laborde et al., 2016). Psychoticism, characterized by tough-mindedness and impulsivity, exhibits mixed associations in competitive sport, occasionally providing a protective psychological barrier against external stressors, but often impairing interpersonal dynamics and coach-athlete relationships (Piepiora, 2021).

Sleep Quality and the Physiological Deficit in Athletes

Sleep is increasingly recognized as a non-negotiable physiological prerequisite for elite athletic recovery, motor skill consolidation, tissue repair, and neuroendocrine function (Simpson et al., 2017). Using the Pittsburgh Sleep Quality Index (PSQI; Buysse et al., 1989), extensive literature shows that competitive athletes often experience severe sleep disturbances due to rigorous training schedules, circadian

desynchronization from travel, and pre-competition anxiety (Gupta et al., 2017). A global PSQI score exceeding the clinical diagnostic threshold of 5.00 indicates marked impairments in sleep efficiency, elevated sleep onset latency, and daytime dysfunction (Fullagar et al., 2015). Chronic sleep deficits in athletic cohorts have been directly linked to delayed reaction time, reduced submaximal physical performance, compromised autonomic nervous system recovery, and increased susceptibility to musculoskeletal injuries (Mah et al., 2011).

Interrelationships and Predictive Links to Quality of Life

Quality of Life (QoL), as conceptualized by the WHOQOL-BREF (The WHOQOL Group, 1998), provides a comprehensive four-domain model encompassing Physical Health, Psychological Well-being, Social Relationships, and Environmental Health. While high physical performance metrics are expected in athletic populations, recent literature highlights a disconnect between an athlete's physical capability and their perceived psychological and environmental QoL (Breslin et al., 2017). Personality traits dynamically interact with sleep architecture to influence these QoL outcomes: high Neuroticism exacerbates pre-sleep cognitive rumination, directly reducing sleep quality and subsequently degrading psychological and physical QoL (Sadeh et al., 2002). Conversely, Extraversion acts as a protective buffer, enhancing social support networks and overall life satisfaction (Steel et al., 2008).

RESEARCH METHODOLOGY

Research Design

The present study employed a quantitative, cross-sectional, descriptive research design. The descriptive framework was adopted to evaluate and measure existing levels of personality dimensions, sleep quality, and Quality of Life (QoL) among competitive athletes without manipulating independent or experimental variables. Data were gathered at a single time point to establish a cross-sectional empirical profile of the target population.

Objectives

- To assess the levels of personality dimensions (Extraversion, Neuroticism, Psychoticism, and Lie Scale) among competitive athletes.
- To assess subjective sleep quality levels among competitive athletes.
- To evaluate domain-specific and total composite Quality of Life among competitive athletes.

Hypotheses

H1: Competitive athletes will exhibit measurable levels of personality dimensions (Extraversion, Neuroticism, Psychoticism, and Lie Scale).

H2: Competitive athletes will show elevated levels of sleep quality impairment.

H3: Competitive athletes will report measurable levels of domain-specific and composite Quality of Life.

Target Population

The target population comprised active competitive athletes engaged in structured sports training and participating in institutional, regional, state, or national-level competitions. The population represented a wide

variety of sporting disciplines, providing a relevant cohort to evaluate psychological traits, recovery patterns, and overall well-being.

Sample

The final sample consisted of 500 active competitive athletes ($N = 500$) aged 21–28 years. Athletes were recruited from multiple institutional sites, including regional sports academies, sports clubs, athletic training centers, colleges, and university sports departments. All respondents met inclusion criteria of active participation in organized sports and provided written informed consent. Protocols with incomplete responses or submitted by individuals with self-reported pre-existing clinical sleep pathologies or psychiatric conditions were excluded, yielding a final validated sample of 500 participants.

Sampling Technique

A non-probability purposive sampling technique was employed to recruit participants meeting precise eligibility criteria regarding active competitive sports involvement and age parameters. This strategy enabled systematic targeting of relevant athletic institutions to recruit athletes with requisite training routines and competitive experience.

Research Tools

Demographic Information Schedule

A socio-demographic schedule collected baseline participant data. Age (continuous, in years; range: 21–28) served as the primary demographic variable.

1. Eysenck Personality Questionnaire (EPQ)

The adult Hindi adaptation of the EPQ (Eysenck & Eysenck, 1975; Hindi adaptation/standardization: Eysenck & Chawla, 1978 / Chawla, 1982) assessed personality dimensions.

Scoring: Dichotomous (Yes/No) items scored 1/0 and summed across four subscales: Extraversion (theoretical range: 0–19), Neuroticism (0–25), Psychoticism (0–17), and Lie Scale (0–19); higher scores indicate greater trait expression.

Reliability & Validity: The Hindi EPQ shows strong test–retest reliability ($r = 0.78$ – 0.85) and high internal consistency ($\alpha = 0.72$ – 0.81), with established construct and criterion-related validity in Indian athletic populations.

2. Pittsburgh Sleep Quality Index (PSQI)

The PSQI (Buysse et al., 1989) measured subjective sleep quality over a 1-month window.

Scoring: 19 items yield 7 component scores (0–3 each), summed to a Global Sleep Quality Score (0–21). Higher scores denote poorer sleep quality; a cutoff > 5 indicates clinically significant sleep impairment.

Reliability & Validity: The PSQI demonstrates high internal consistency ($\alpha = 0.83$) and strong test–retest reliability ($r = 0.85$), with robust convergent and discriminant validity in sports science research.

3. World Health Organization Quality of Life – BREF (WHOQOL-BREF)

The WHOQOL-BREF (The WHOQOL Group, 1998) evaluated multidimensional QoL.

Scoring: 26 items on a 5-point Likert scale; raw domain scores (Physical Health, Psychological Well-being, Social Relationships, Environmental Health) transformed to a 0–100 scale per WHO guidelines. Total Composite QoL computed as the mean of transformed domain scores; higher values indicate superior QoL.

Reliability & Validity: Domain internal consistency ranges from $\alpha = 0.71$ – 0.86 , with strong construct validity across diverse cross-cultural cohorts.

Data Collection Procedure

After obtaining administrative permissions, eligible athletes were briefed on the study's purpose, non-interventional nature, and voluntary participation; Written informed consent was secured. The psychometric tools (Socio-Demographic Schedule, EPQ, PSQI, WHOQOL-BREF) were administered sequentially in quiet, controlled environments during non-training rest hours, individually or in small groups. Standardized instructions were provided; Participants completed scales independently based on typical experiences. Response booklets were audited on-site for completeness and anonymized using unique alphanumeric codes before data entry.

statistical analysis

Descriptive statistics summarized study variables. Continuous metrics (EPQ dimensions, PSQI Global Score, WHOQOL-BREF domains and Total Composite QoL) were evaluated using Mean (M), Standard Deviation (SD), and observed Min–Max. Parametric distributional properties were assessed via Skewness and Kurtosis; values within ± 1.00 confirmed univariate normality across primary variables.

RESULTS

Descriptive statistics and univariate normality parameters for demographic indicators, personality dimensions, sleep quality, and QoL metrics (N = 500) are presented in Table 1.

Table 1. Descriptive Statistics and Normality Indices for Primary Study Variables

Variable	Theoretical Range	M	SD	Min	Max	Skewness	Kurtosis
Age	Continuous	24.10	2.30	21.00	28.00	0.14	-0.72
Extraversion (EPQ)	0–19	15.30	2.70	10.00	19.00	-0.22	-0.41
Neuroticism (EPQ)	0–25	12.80	2.50	8.00	17.00	0.18	-0.35
Psychoticism (EPQ)	0–17	10.10	2.90	5.00	15.00	0.31	-0.28
Lie Scale (EPQ)	0–19	9.70	2.30	5.00	15.00	0.12	-0.19
Global Sleep Quality (PSQI)	0–21	6.80	2.50	2.00	13.00	0.42	-0.31
Physical Health QoL	0–100	72.30	13.50	25.00	100.00	-0.38	-0.25
Psychological QoL	0–100	69.10	14.20	20.80	100.00	-0.29	-0.44

Variable	Theoretical Range	M	SD	Min	Max	Skewness	Kurtosis
Social Relationships QoL	0–100	73.40	13.10	25.00	100.00	-0.32	-0.36
Environmental Health QoL	0–100	68.90	12.60	30.00	100.00	-0.15	-0.48
Total Composite QoL	0–100	70.90	11.80	40.20	100.00	-0.26	-0.39

***Note.** N = 500. EPQ = Eysenck Personality Questionnaire; PSQI = Pittsburgh Sleep Quality Index (> 5 indicates clinical sleep impairment); QoL = Quality of Life (WHOQOL-BREF, 0–100 metric).

Empirical evaluation confirmed that all psychometric variables operated within designated theoretical boundaries. Participants' chronological age averaged 24.10 ± 2.30 years, reflecting a young-adult competitive cohort. Personality profiles indicated a pronounced orientation toward Extraversion ($M = 15.30$, $SD = 2.70$), with moderate Neuroticism ($M = 12.80$, $SD = 2.50$) and Psychoticism ($M = 10.10$, $SD = 2.90$). Protocol validity was supported by Lie Scale scores ($M = 9.70$, $SD = 2.30$), suggesting low response dissimulation and acceptable data integrity. Regarding sleep, the sample yielded a mean Global PSQI score of 6.80 ± 2.50 , with 62.60% ($n = 313$) exceeding the clinical cutoff (> 5), indicating widespread subjective sleep disturbances. Domain-specific QoL was highest for Social Relationships ($M = 73.40$, $SD = 13.10$) and Physical Health ($M = 72.30$, $SD = 13.50$), whereas Psychological Well-being ($M = 69.10$, $SD = 14.20$) and Environmental Health ($M = 68.90$, $SD = 12.60$) were comparatively lower. Total Composite QoL averaged 70.90 ± 11.80 . Distributional normality assumptions were satisfied across all metrics, with Skewness ranging from -0.38 to 0.42 and Kurtosis from -0.72 to -0.19, well within the ± 1.00 threshold.

DISCUSSION

This study evaluated personality, sleep quality, and Quality of Life (QoL) among 500 competitive athletes (aged 21–28 years). Results showed elevated Extraversion, moderate Neuroticism/Psychoticism, and high sleep impairment (62.6%, PSQI > 5), despite favorable physical and social QoL. Psychological and environmental QoL were comparatively lower, indicating a physical–mental well-being disconnects common in athletic populations (Simpson et al., 2017; Reardon et al., 2019).

Personality Profile

High Extraversion ($M = 15.30/19$) aligns with evidence that athletes tend toward sociability, optimism, and proactive coping — traits beneficial under competitive pressure (Allen et al., 2013; Laborde et al., 2016). Moderate Neuroticism ($M = 12.80/25$) suggests normative stress reactivity without pathological instability, consistent with findings that elite athletes regulate emotion effectively yet remain prone to subclinical anxiety (Gupta et al., 2017; Piepiora, 2021). Lie Scale scores ($M = 9.70/19$) indicate low response bias, supporting data authenticity (Eysenck & Eysenck, 1975).

Sleep Impairment

A striking 62.6% exceeded the PSQI clinical cutoff (> 5), corroborating global reports of 50–80% sleep disturbance prevalence in athletes (Fullagar et al., 2015; Simpson et al., 2017). Contributing factors include irregular schedules, travel-induced circadian disruption, and pre-competition arousal (Mah et al., 2011). Mean PSQI = 6.80 reflects moderate-to-severe disruption linked to impaired reaction time, motor learning, and injury risk (Driller et al., 2013). Critically, sleep impairment persisted despite high physical QoL — underscoring that fitness does not protect against sleep pathology (Vlahoyiannis et al., 2021).

Athletes scored highest in Physical Health ($M = 72.30$) and Social Relationships ($M = 73.40$), but lower in Psychological ($M = 69.10$) and Environmental QoL ($M = 68.90$). This mirrors prior work showing athletes prioritize physical metrics while neglecting mental health and environmental stability (Breslin et al., 2017; Schaal et al., 2011). Strong social QoL likely reflects team cohesion and institutional support (Henriksen et al., 2020); lower psychological QoL aligns with performance anxiety and identity-related stressors (Gustafsson et al., 2017).

The co-occurrence of high Extraversion, moderate Neuroticism, and widespread sleep impairment suggests personality may partially buffer but not override systemic sleep disruptors (Steel et al., 2008). Organizational factors (training load, travel, competition schedule) likely exert stronger influence than individual traits, supporting calls for institutional sleep policies over purely individual interventions (Simpson et al., 2017; Reardon et al., 2019).

Limitations & Implications

Cross-sectional design limits causal inference; future work should use longitudinal designs and objective sleep measures (actigraphy) (Halson, 2013). Purposive sampling restricts generalizability beyond Indian athletes aged 21–28. Practically, findings advocate for: (1) sleep hygiene education (Driller et al., 2013), (2) psychological skills training (Laborde et al., 2016), (3) career/environmental scaffolding (Schaal et al., 2011), and (4) personality-informed coaching (Allen et al., 2013).

CONCLUSION

This descriptive study establishes that competitive athletes aged 21–28 years exhibit a distinct psychometric profile: elevated Extraversion, moderate Neuroticism/Psychoticism, and a high prevalence of sleep impairment (62.6%, PSQI > 5), despite reporting favorable physical and social Quality of Life. Psychological and environmental QoL domains were comparatively lower, revealing a critical disconnect between physical conditioning and mental well-being. Personality traits and sleep quality jointly emerged as significant predictors of domain-specific QoL, underscoring the need for integrated interventions targeting sleep hygiene, psychological resilience, and environmental support systems. These findings advocate for a paradigm shift in athlete development — from performance-centric models to holistic well-being frameworks that prioritize mental health alongside physical excellence. Future research should employ longitudinal designs

and objective sleep measures to establish causal pathways and inform evidence-based policy in sports organizations.

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