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9 Mental Toughness of Badminton Athletes at Bina Guna College of Sports and Health: A Descriptive Mixed-Methods Study

Yean Tulus Marpaung^{1*}, Eka Abdurrahman², Ramadan³

^{1,2,3} Sekolah Tinggi Olahraga dan Kesehatan Bina Guna, Medan, Indonesia

*Corresponding author: yeam@gmail.com

ABSTRACT

Objectives: To describe the mental toughness and competition-related psychological readiness of badminton athletes in the Student Activity Unit (UKM) at Bina Guna College of Sports and Health (STOK Bina Guna), Medan, in 2026.

Materials and Methods: A descriptive mixed-methods design was used at STOK Bina Guna from March to April 2026. The study involved the 25 registered badminton UKM athletes and drew additional information from coaches and administrators. Quantitative data were obtained from a 20-item, five-point Likert questionnaire; qualitative data came from semi-structured interviews, direct and reflective field notes, observation, and organizational documents. Questionnaire and documentation scores were summarized as percentages, while qualitative data were reduced, coded, displayed, and verified. Credibility, transferability, dependability, and confirmability procedures supported trustworthiness.

Results: The questionnaire yielded an overall mental-readiness score of 86.3% (good). The interview assessment reported 91.8% (very good), and documentation analysis yielded 90.5% (very good). Supporting indicators included 85.9% attendance across 20 scheduled sessions, 85.7% facility availability, and 100% completeness of the documented training program. Qualitative findings nevertheless identified pre-competition fear, anxiety, low self-confidence, and difficulty maintaining focus, alongside perceived benefits of structured training, practice matches, coach support, teamwork, and competition exposure.

Conclusions: The athletes displayed generally favorable mental-readiness indicators, but competition-specific anxiety and attentional disruption remained important concerns. Structured psychological-skills practice should therefore be integrated into regular badminton training. Cause instrument psychometrics, subgroup characteristics, and the derivation of an overall composite score were not reported, the findings should be interpreted descriptively rather than as evidence of intervention effectiveness.

Keywords: badminton; competitive anxiety; mental toughness; psychological readiness; student athletes

INTRODUCTION

Competitive badminton requires rapid decisions, repeated high-intensity actions, and the ability to remain composed when rallies and scores create pressure. Mental toughness is commonly understood as a multidimensional capacity that helps athletes sustain purposeful behavior, confidence, and control under demanding conditions (Jones et al., 2002; Gucciardi, 2017). It is associated with competitive level and performance, although definitions and measures vary across studies (Cowden, 2017; Nicholls et al., 2009).

Competition anxiety can interfere with attention, decision-making, and confidence. A systematic review of elite sport identified personal, interpersonal, and environmental determinants of anxiety (Rice et al., 2019), while sport-focused clinical literature emphasizes that anxiety symptoms can be both performance related and clinically relevant (Ford et al., 2017). In badminton specifically, recent evidence has linked psychological performance profiles with self-confidence, stress, tension, anxiety, and coping resources (Suratmin & Yudhistira, 2024; Yadava & Chanu, 2025).

The STOK Bina Guna Badminton UKM comprises 25 students from different semesters. Regular sessions are held on Mondays and Thursdays, with practice matches on Fridays, and the team has participated in several inter-university tournaments. Preliminary observations indicated that athletes completed the prescribed physical and technical preparation, yet some reported fear, anxiety, reduced confidence, and loss of focus before or during competition. These observations suggested a need to examine psychological readiness rather than infer readiness solely from training completion or predicted match outcomes.

Accordingly, this study aimed to describe the mental toughness and competition-related psychological readiness of STOK Bina Guna badminton athletes in 2026 by integrating questionnaire results with interviews, observations, field notes, and organizational documentation.

1 MATERIALS AND METHODS

Study design and setting

This study used a descriptive mixed-methods design because the available dataset combined numerical ratings with qualitative accounts and observational and documentary evidence. The study was conducted from March to April 2026 at the STOK Bina Guna Badminton UKM, Jalan Aluminium Raya No. 77, Tanjung Mulia Hilir, Medan Deli, Medan, North Sumatra, Indonesia. The design was observational and descriptive; no experimental intervention or comparison group was used.

Participants and data sources

The participant pool comprised the 25 registered student athletes in the badminton UKM. Coaches and administrators also served as contextual informants. The source records did not report athletes' age, sex, competitive level, the number of interview informants, response rate, or sampling procedure; these omissions constrain assessment of representativeness and are acknowledged as study limitations.

Instruments and data collection



Quantitative data were obtained with a 20-item questionnaire rated on a five-point Likert scale. Items addressed competition as a learning experience, goal orientation, anxiety, confidence, focus, motivation, sportsmanship, team cohesion, institutional support, and the coach's role. Semi-structured interviews were used to clarify questionnaire responses. Direct and reflective field notes captured training and organizational activities. Documentary evidence included attendance records, training plans, facilities, awards, photographs, and videos. The source manuscript did not provide item wording by response option, scoring thresholds, evidence of content validity, or reliability coefficients.

Data analysis and trustworthiness

Questionnaire, interview-assessment, and documentation scores were summarized as percentages using the categories reported in the source dataset. Qualitative analysis followed an interactive process of data collection, reduction and coding, display, and conclusion verification. Credibility was supported through peer debriefing; transferability through comparison with theory and prior studies; dependability through repeated checking; and confirmability through documentation of the research process. Because no prespecified formula for combining the three domains was available, domain scores were not averaged into a single composite.

Ethical considerations

The source manuscript did not report approval by a research ethics committee, an approval number, or the procedure for obtaining informed consent. These details must be supplied by the authors before journal submission.

RESULTS

Quantitative indicators

The questionnaire score was 86.3%, categorized as good. The interview assessment was reported as 91.8% (very good), while documentary evidence was scored at 90.5% (very good). Attendance reached 85.9% across 20 scheduled training sessions, facilities and infrastructure availability reached 85.7%, and training-program documentation was complete (100%). The main facility gap was the absence of an electronic scoreboard. Table 1 reports each indicator separately because the dataset did not specify a validated aggregation rule.

Table 1. Descriptive indicators reported in the study records.

Mental-readiness questionnaire	86.3%	Good
Interview assessment	91.8%	Very good
Documentation assessment	90.5%	Very good
Attendance (20 sessions)	85.9%	Good
Facilities and infrastructure	85.7%	Adequate/good
Training-program documentation	100%	Complete

Qualitative findings

Four recurring themes were identified. First, athletes viewed competition as a learning opportunity that could strengthen goal orientation, motivation, friendship, and sportsmanship. Second, they recognized anxiety, fear, low confidence, careless decisions, and disrupted concentration as barriers to optimal performance. Third, teamwork, communication, team cohesion, and the coach's guidance were perceived as central to readiness and success. Fourth, regular training, physical conditioning, technical practice, practice matches, competition exposure, institutional support, and spiritual confidence were described as resources that supported mental preparation.

Interview accounts indicated general satisfaction with coaching and perceived improvements in self-confidence, self-belief, teamwork, and concentration. Athletes also reported more opportunities to enter inter-university competitions after the UKM was established. These perceptions were consistent with the attendance and training-document records, but the observational design did not test whether the program caused psychological change.

DISCUSSION

The principal finding was a favorable overall questionnaire score alongside persistent reports of fear, anxiety, low self-confidence, and attentional disruption in competition. This combination is plausible: a global readiness score may appear good while situation-specific vulnerabilities remain. Mental toughness is not the absence of distress; it concerns how athletes regulate thoughts, emotions, and behavior while pursuing performance goals (Gucciardi, 2017). The result also aligns with evidence that mentally tougher athletes tend to perform or compete at higher levels, while the strength and direction of associations vary by construct and measurement approach (Cowden, 2017; Nicholls et al., 2009).

The anxiety theme is particularly relevant in a fast, open-skill sport such as badminton. Prior badminton research found meaningful relationships among self-confidence, stress, tension, and anxiety (Suratmin & Yudhistira, 2024), and coping skills have been associated with mental toughness in badminton players (Yadava & Chanu, 2025). More broadly, anxiety in athletes reflects interacting personal and environmental determinants (Rice et al., 2019), and it may impair performance when cognitive worry and physiological arousal are interpreted as uncontrollable (Ford et al., 2017). The present findings therefore support routine monitoring of competition-specific anxiety rather than relying only on a single global percentage.

Athletes' positive perceptions of structured training, practice matches, coach guidance, and teamwork are consistent with developmental accounts of mental toughness. Coaches shape challenge, feedback, autonomy, and coping opportunities, all of which influence athletes' psychological responses (Gucciardi et al., 2009). Resilience research similarly identifies supportive relationships, motivation, confidence, focus, and perceived social support as protective factors under sporting stress (Sarkar & Fletcher, 2014). The



strong attendance and complete 7 training records suggest a stable delivery context, but they are implementation indicators and should not be treated as direct measures of mental toughness.

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Psychological skills training may be useful for the needs identified here. Techniques such as goal setting, 10 imagery, self-talk, relaxation, and attentional routines can complement physical and technical preparation (Birrer & Morgan, 2010). A systematic review and meta-analysis indicates that mental-toughness interventions show promising effects but that study quality, conceptual variation, and nonrandomized designs limit causal certainty (Stamatis et al., 2020). Recent intervention work has also reported reductions in competitive anxiety and improvements in psychological profiles after structured psychological programs, although findings from football cannot be transferred directly to badminton (Domínguez-González et al., 2024a, 2024b).

Interpretation should remain cautious. First, the questionnaire appears locally developed, and its validity and reliability were not reported. Second, the study lacks demographic and competition-level detail and does not specify interview sample size or analytic coding procedures in sufficient depth. Third, self-report, coach-related expectations, and researcher observation may introduce social-desirability and confirmation bias. Fourth, there was no baseline, comparison group, or performance outcome, so perceived benefits cannot establish program effectiveness. Finally, the separate percentages measure different domains; averaging them would imply commensurability that has not been demonstrated. Future studies should use validated mental-toughness and competitive-anxiety instruments, report participant characteristics and missing data, preregister scoring rules, and combine repeated psychological measures with objective match indicators.

CONCLUSIONS

STOK Bina Guna badminton athletes demonstrated generally favorable descriptive indicators of mental readiness, supported by high participation, complete training documentation, and positive perceptions of coaching and competition exposure. Nevertheless, fear, anxiety, low confidence, and loss of focus remained evident around competition. Coaches should integrate systematic psychological-skills practice and competition-specific monitoring into regular training. The results are descriptive and should not be interpreted as proof that the existing program caused improvements in mental toughness.

PRACTICAL IMPLICATIONS

A short psychological component can be embedded in each weekly session: pre-performance breathing and attentional cues, process-based goals, pressure simulations, post-match reflection, and referral pathways when anxiety is persistent or impairing. Progress should be tracked with validated measures and linked to observable match behaviors.

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AUTHOR CONTRIBUTIONS

Yoan Tulus Marpaung: conceptualization, methodology, investigation, 1 coordination, and supervision. Eka Abdurrahman: formal analysis, interpretation, and writing—original draft. Ramadan: validation, review, and editing. All authors approved the final manuscript and accept responsibility for its integrity.

CONFLICT OF INTEREST AND FUNDING

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The authors declare no conflict of interest. Funding information was not reported in the source manuscript and should be completed before submission.

DATA AVAILABILITY AND ETHICS STATEMENTS

Data-availability, ethics-approval, and informed-consent statements were not provided in the source manuscript and must be completed by the authors in accordance with MJPES requirements before submission.

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