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Mental Toughness Across Sport Types: A Comparative Study of Individual and Team University Athletes

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Abstract

Mental toughness (MT) is widely recognized as a critical psychological construct influencing athletic performance across different sport types. This study aimed to compare MT levels between individual and team sport athletes participating in a university-level intercollegiate sports event hosted by Universiti Teknologi MARA (UiTM), Shah Alam, Malaysia. A cross-sectional design was employed with a purposive sample of 68 university athletes (34 individual sport, 34 team sport) who completed the Sport Mental Toughness Questionnaire (SMTQ), assessing confidence, constancy, and control. Data were analyzed using descriptive statistics and independent-samples t-test. Results showed no statistically significant difference in overall MT between individual and team athletes t (66) = –0.537, p = 0.593), with a negligible effect size (Cohen's d = –0.13). Subscale analyses similarly revealed no significant differences across confidence, constancy, and control. These findings suggest that sport type alone may not account for variations in MT among university athletes. The study emphasizes the importance of universal psychological training interventions to enhance resilience across sport categories.

Keywords: Mental Toughness Individual Sport, Team Sport, University Athletes, SMTQ

Introduction

Sport psychology has increasingly emphasized the central role of psychological skills in shaping athletic performance. Among these skills, mental toughness (MT) is consistently regarded as one of the most critical determinants of success, enabling athletes to withstand the pressures, adversities, and uncertainties inherent in sport (Weinberg & Gould, 2019). Conceptually, MT reflects a psychological advantage that allows athletes to maintain focus, confidence, resilience, and consistency even under stressful or adverse conditions. Empirical evidence has linked MT to enhanced motivation, adaptive coping strategies, and sustained performance in competitive contexts (Gucciardi et al., 2021).

MT is widely understood as a multidimensional construct consisting of three interrelated dimensions: confidence, constancy, and control (Sheard et al., 2009). Confidence

reflects the belief in one's ability to succeed, constancy denotes persistence and commitment over time, and control represents the capacity to regulate emotions under pressure. Together, these components enable athletes to achieve psychological stability and maintain consistent performance. Numerous studies have further associated MT with resilience to stress, positive well-being, and better competitive outcomes (Mahoney et al., 2014; Guszkowska & Wójcik, 2020).

Despite its acknowledged importance, scholarly debate continues regarding whether MT differs between individual and team sport athletes. Participation in team sports is often associated with collective responsibility, social support, and group cohesion, which can enhance recovery from setbacks and buffer against anxiety or depression (Nazri & Salamuddin, 2019; Gu et al., 2022). Conversely, athletes in individual sports are typically required to demonstrate greater self-regulation, discipline, and accountability, with research showing strong correlations between self-confidence and performance outcomes in such contexts (Roy et al., 2023; Kumar et al., 2024). These contrasting demands highlight the need for comparative research to better understand how MT manifests across sport types.

Existing literature, however, provides mixed findings. Pinto (2015) and Yadav and Verma (2022) reported that team athletes demonstrated higher MT scores, particularly in handling pressure and reboundability, while Joginder and Rohit (2023) found no significant differences between sport categories among intercollegiate athletes. Such inconsistencies may reflect cultural differences, variations in competition levels, or differences in the instruments used to measure MT.

Within the Malaysian context, empirical work on MT remains limited. Prior studies have primarily examined elite or professional athletes, often highlighting associations between emotional intelligence and MT (Nazri & Salamuddin, 2019; Muhamad & Zawi, 2022). However, research on university athletes who face the dual demands of academic responsibilities and competitive sportremains scarce. This population is particularly important, as the stressors they encounter can significantly influence both their academic success and athletic development.

Accordingly, the present study seeks to compare MT levels between individual and team sport athletes who participated in *Sukan Antara Kolej (SUKOL)*, an intercollegiate sports competition at Universiti Teknologi MARA (UiTM), Shah Alam, Malaysia. Beyond assessing group differences, the study contributes to the broader scholarly debate on the universality of MT while offering context-specific insights into the psychological attributes of Malaysian university athletes.

Methodology

Research Design and Participants

This study adopted a quantitative, cross-sectional design aimed at comparing MT levels between individual and team sport athletes. Using purposive sampling, a total of 68 athletes (34 individual sport, 34 team sport) were recruited from UiTM Shah Alam during SUKOL 2025 through direct approach and official team managers' referrals. Inclusion criteria required participants to (a) be aged 18–27 years, (b) be currently enrolled as UiTM students, and (c) have at least one year of competitive sporting experience. Athletes who had previously

represented Malaysia at the international level or failed to meet the inclusion criteria were excluded to maintain sample homogeneity.

Instruments

MT was assessed using the Sport Mental Toughness Questionnaire (SMTQ) developed by Sheard et al. (2009), a validated 14-item instrument measuring three subscales: confidence, constancy, and control. Items were rated on a 4-point Likert scale ranging from 1 (not at all true) to 4 (very true), with higher scores reflecting greater levels of MT. A demographic questionnaire was also administered to capture age, gender, sport type, and years of experience.

Procedure and Ethics

Data collection was conducted face-to-face in person prior to SUKOL competitions, ensuring that athletes were assessed in a competitive but non-fatigued state. Participation was voluntary, and informed consent was obtained from all athletes. Anonymity and confidentiality were assured, and no identifying information was collected. Ethical approval for the study was obtained from the UiTM Ethics Review Committee (ERC/FSR/UG/MR/2025/APRIL/83) in accordance with institutional research guidelines.

Data Analysis

Data were analyzed using SPSS version 29. Descriptive statistics were computed for demographic variables and MT scores. Assumptions of normality were tested using the Shapiro–Wilk test, while homogeneity of variance was assessed via Levene's test. An independent-samples t-test was performed to compare MT levels between individual and team athletes. Effect sizes were calculated using Cohen's d to evaluate the magnitude of group differences.

Results

Descriptive statistics indicated that individual sport athletes obtained a mean score of M = 38.38 (SD = 6.84) on the SMTQ, whereas team sport athletes recorded a slightly higher mean of M = 39.26 (SD = 6.72). Although the mean value for team sport athletes appeared marginally greater, the difference of less than one point suggested only a very small variation between the two groups. These results provide preliminary evidence that mental toughness levels are relatively consistent across both categories of athletes.

Prior to inferential testing, assumptions of normality and homogeneity were examined. The Shapiro–Wilk tests confirmed that both groups' data were normally distributed ($p > 0.05$), fulfilling the requirement for parametric analysis. Additionally, Levene's test for equality of variances indicated no violation of homogeneity ($p > 0.05$), thereby validating the use of the independent-samples t-test.

The independent-samples t-test in the table 1 showed that the difference between individual and team sport athletes was not statistically significant, t (66) = –0.537, p = 0.593. The calculated 95% confidence interval (–4.164 to 2.399) included zero, reinforcing the conclusion that there was no reliable difference between the two means. In practical terms, the effect size (Cohen's d = –0.13) was negligible, indicating that the observed difference was too small to be meaningful in applied sport psychology contexts.

Table 1
The independent-samples t-test between individual and team sport athletes

Sport type	M	SD	t	df	p(2-tailed)	Mean difference	Cohen's d
Individual	38.38	6.84					
Team	39.26	6.72	-0.537	66	0.593	-0.882	-0.13

Further analysis of SMTQ subscales—confidence, constancy, and control—also demonstrated no statistically significant differences between groups. Both individual and team athletes scored comparably on confidence, reflecting belief in personal ability; constancy, representing commitment and perseverance; and control, which involves regulation of emotions under pressure. The similarity across these sub-dimensions supports the overall finding that mental toughness is not substantially shaped by the type of sport at the collegiate level.

Overall, these results suggest that mental toughness among UiTM athletes is a relatively stable psychological attribute that transcends sport category. The absence of significant differences highlights the importance of looking beyond sport type to understand factors that contribute to resilience and psychological strength, such as training environment, coaching support, and individual personality characteristics.

Discussion

The present findings indicate that sport type does not significantly influence MT levels among UiTM collegiate athletes. Joginder and Rohit (2023) reported no significant difference in mental toughness between individual and team sport athletes, which supports the present findings. Their results highlight that mental toughness may be shaped more by shared factors such as exposure to structured training, competitive demands, and coaching strategies rather than by the type of sport itself. Similarly, Lawless, Maher, and colleagues (2016) found no significant differences in mental toughness or self-esteem between male athletes in individual and team sports, further suggesting that psychological attributes may be more influenced by experience and training environments than by sport classification. Sun (2018) also reported comparable levels of mental toughness among collegiate athletes from both sport types, reinforcing the view that sport context alone does not dictate psychological resilience. Taken together, these findings challenge traditional assumptions that individual athletes develop toughness through self-reliance while team athletes cultivate resilience through group dynamics. Instead, they indicate that mental toughness is a multifaceted construct shaped by consistent training, psychological preparation, and exposure to competitive pressures common across sport types.

Moreover, MT is influenced by multiple factors beyond sport type, including coaching style, personality traits, and psychological skills training (Bayköse et al., 2021). For example, athletes exposed to structured goal-setting strategies, effective feedback systems, and supportive coaching cultures are likely to develop resilience regardless of whether they compete in individual or team-based sports. (state citation) Another possible explanation is the role of academic sport balance among collegiate athletes. Another possible explanation is the role of academic–sport balance among collegiate athletes. Students competing in

SUKOL must manage dual demands of academic coursework and athletic training, which may normalize their exposure to stress across both sport types. As a result, academic pressures might overshadow differences arising purely from sport contexts, leading to a leveling effect on MT scores (Lawless, 2016; Sun, 2018).

Contrasting findings in prior research highlight the role of contextual variables. For instance, Pinto (2015) and Yadav & Verma (2022) found team athletes scored higher in reboundability and handling pressure, possibly due to stronger social support in team environments. On the other hand, individual athletes in certain contexts may demonstrate greater concentration and focus These variations suggest that MT is shaped by cultural, institutional, and sport-specific factors (Roy et al., 2023).

The lack of difference may be attributed to shared training environments and resources available at UiTM, which provide both groups with similar psychological preparation. Moreover, MT is influenced by multiple factors beyond sport type, including coaching style, personality traits, and psychological skills training (Bayköse et al., 2021).
Practically, the findings imply that coaches and sport psychologists can design mental training programs applicable to both sport types. Techniques such as goal-setting, visualization, self-talk, and mindfulness can be implemented across individual and team contexts to build resilience. For administrators, investing in counseling and sport psychology services at the university level can benefit all athletes regardless of sport category.

Conclusion

This study concludes that individual and team sport athletes at UiTM Shah Alam demonstrate similar levels of mental toughness. The type of sport alone does not appear to be a decisive factor in shaping MT. The study contributes to the growing body of sport psychology literature in Malaysia by focusing on collegiate athletes, a population often overlooked. The findings highlight that mental toughness is a multidimensional construct influenced not only by sport type but also by broader contextual factors such as coaching quality, academic stressors, institutional support, and cultural values. Thus, interventions aimed at enhancing mental resilience should adopt a holistic approach rather than focusing exclusively on sport-specific differences.

Future research should include larger samples from multiple universities, employ longitudinal designs, and explore qualitative approaches to capture athletes lived experiences of MT.Examining gender differences, specific sport categories, and interventions such as mental skills training programs could further enhance understanding. Additionally, studies could explore the impact of emerging issues such as technology-based psychological training, athlete mental health awareness, leadership coaching styles, and the transition of athletes from collegiate to elite levels.

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