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Rethinking Mental Toughness: Evidence from Team and Individual Athletes in Indonesia

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Abstract

This study aimed to examine and compare the levels of mental toughness (MT) of Indonesian athletes in team and individual sports and to explore its relationship with age of the athletes. A cross-sectional comparative design was employed. The study population consisted of athletes participating in the Porprov 2025 multi-sport event. A sample of 122 athletes (M~age~ = 18.76, SD = 2.12) was selected through convenience sampling, comprising participants from team sports (futsal, rugby; n=57) and individual sports (fencing, judo, jujitsu, pétanque; n=65). The research instrument was a culturally adapted 20-item Mental Toughness questionnaire measuring confidence, discipline, focus, resilience, and teamwork on a 4-point Likert scale. Data were analyzed by using descriptive statistics, Welch's t-test, Mann-Whitney U test, and Pearson correlation. The findings revealed a moderate level of overall MT (M = 2.91/4). There was no significant difference in MT between team and individual sports (Welch's t = 0.723, p = 0.471; Cohen's d = 0.13) and no significant correlation with age (r = -0.009, p = 0.940). Key strengths were identified in discipline and persistence, whereas weaknesses were found in post-error recovery, role clarity under pressure, and fatigue management. The adapted scale demonstrated modest reliability (α = 0.546). The development of MT in this context appears to depend more on specific micro-skills than on the sport type or age, underscoring the importance of targeted skill-focused interventions in Indonesian athletic development.

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INTRODUCTION

Mental toughness (MT) is a key psychological construct encompassing traits such as confidence, discipline, focus, and resilience under pressure, widely acknowledged as essential to athletic performance (González-Hernández et al., 2020; Gucciardi, 2017). In sports, MT enables athletes to cope with competition, recover from setbacks, and strive for success. However, most MT research has been conducted in Western contexts, with limited studies examining MT among young athletes in developing sports nations like Indonesia (Low et al., 2023). This study addresses this gap by investigating MT among young athletes in a multisport event in Indonesia.

The conceptualization of MT has evolved to encompass broader qualities including self-confidence, dedication, and emotional regulation (Varghese et al., 2022). These attributes are particularly important for young athletes who face significant psychological demands in competitive environments while still developing psychological resilience (Henriksen & Stambulova, 2023; Aizava et al., 2023). Understanding how MT emerges and varies across sport types is crucial for designing effective mental training programs.

Sport type may influence MT development differently. Team sports such as futsal and rugby require athletes to coordinate individual performance with collective goals, potentially fostering cooperation and shared responsibility (Amorose & Smith, 2003). In contrast, individual sports such as jujitsu, fencing, and judo demand self-direction and autonomous decision-making under pressure (Luken, 2020). These differences suggest that MT may manifest differently depending on sport type, with team sport athletes potentially developing stronger collective resilience and individual sport athletes cultivating higher personal determination (Gucciardi, 2017).

This study extends existing literature by examining MT in a diverse sample of 122 athletes from both team (futsal, rugby) and individual (jujitsu, fencing, judo, petanque) sports at Porprov 2025, a regional multi-sport event in Indonesia. The variety of sports allows for nuanced comparisons across disciplines, addressing the common limitation of single-sport samples (Nicholls & Perry, 2016). Additionally, the regional focus sheds light on how local competitive environments shape psychological attributes (Wallstam & Kronenberg, 2022).

Cultural context also plays a role in shaping MT. In collectivist cultures such as Indonesia, values like group harmony and shared success are emphasized (Nuss & Li, 2021), which may enhance team-related MT components, while individual sport athletes might prioritize personal discipline and accountability (Quartiroli et al., 2022). Understanding these cultural influences is crucial for interpreting results and generalizing them to similar societies.

This study employs a culturally adapted 20-item version of the MTQ, measuring five dimensions: confidence, discipline, focus, resilience, and teamwork. By analyzing data from a broad participant pool, this research aims to identify MT patterns related to sport type and age group, with practical implications for coaches, sports psychologists, and policymakers in developing targeted psychological interventions.

METHOD

Research Design

We conducted a cross-sectional, comparative study at a regional multi-sport event (Porprov 2025), focusing on differences in mental toughness (MT) between athletes in team and individual sports.

Participants

A total of 122 athletes participated (M_age = 18.76, SD = 2.12) recruited through convenience sampling at the Porprov 2025 event. Athletes were drawn from six sports: Futsal (n = 38) and Rugby (n = 19) representing team sports (total n = 57), and Anggar/Fencing (n = 19), Judo (n = 18), Jujitsu (n = 13), and Petanque (n = 15) representing individual sports

(total n = 65). Criteria:(1) active participation in one of the listed sports at the event, (2) age in the adolescent to young-adult range, and (3) provision of informed consent (and parental consent where applicable). Exclusion criteria were: incomplete questionnaires rendering MT scoring impossible (none met exclusion).

Instruments

Mental Toughness. MT was assessed using a culturally adapted 20-item questionnaire aligned to common MTQ domains (confidence, discipline/commitment, focus/attentional control, resilience, and teamwork/collective efficacy). Items were rated on a 4-point Likert scale (1 = strongly disagree to 4 = strongly agree). To reduce acquiescence bias, negatively keyed items were reverse-scored prior to aggregation. Based on item wording, the reverse-coded items were: 5, 6, 7, 8, 13, 14, 15, 16, 19, 20. A total MT score was computed as the mean of all 20 items; higher scores indicate greater mental toughness. Background variables. Athletes reported age and sport. Sports were subsequently mapped to team vs individual categories for analysis. Reliability, internal consistency of the 20-item scale in this sample was evaluated using Cronbach's alpha (α). The observed reliability for the total scale in the study sample was α = 0.546, indicating modest internal consistency and suggesting room for refinement of items/subscales in future work.

Procedure

Data were collected on-site via supervised, self-administered questionnaires. Prior to participation, athletes were informed about the study aims, voluntariness, confidentiality, and the option to withdraw at any time without penalty. All procedures adhered to ethical principles for research with human participants; institutional approval was obtained, and consent (and assent/parental consent where applicable) was documented.

Data Preparation and Quality Control

(1) Normalization of sport labels. Sport names were standardized (case-insensitive harmonization) and then mapped into team (Futsal, Rugby) vs individual (Fencing, Judo, Jujitsu, Petanque).

(2) Scoring. Negatively keyed items (5, 6, 7, 8, 13, 14, 15, 16, 19, 20) were reverse-coded (on the 1–4 scale), and the MT total score was calculated as the mean of the 20 items for each athlete.

(3) Missing data. The final dataset had no missing values on MT total after scoring; all 122 cases were retained.

(4 Outliers. We screened MT total scores for extreme values (±3 SD from the sample mean); none met removal criteria.

Reliability

Internal consistency of the 20-item scale in this sample was evaluated using Cronbach's alpha (α). The observed reliability for the total scale in the study sample was α = 0.546, indicating modest internal consistency and suggesting room for refinement of items/subscales in future work.

Data Analysis

All analyses were conducted using a significance level of α = 0.05 (two-tailed) with 95% confidence intervals (CI). Descriptive statistics were first calculated to summarize the Mental Toughness (MT) total scores, including mean, standard deviation (SD), and 95% CI for the full sample as well as by group (team vs. individual). The primary comparison of MT between team and individual sports was carried out using Welch's t-test, which is robust to unequal variances, and the results were reported with the test statistic (t), p-value, and effect size (Cohen's d) using the pooled SD. To complement this parametric test, a Mann–Whitney U test was conducted as a distribution-free robustness check, with U and p reported. Before performing inferential analyses, we inspected the distributions of MT scores and group variances; however, the Welch procedure was retained regardless of variance equality as a conservative approach. All statistical analyses were performed in SPSS.

RESULTS

Summary of mental toughness scores for all athletes it can be seen in table 1.

Table 1. Summary of Mental Toughness Scores for All Athletes

N	MT (Mean)	MT Std Dev	Cronbach
122	2.908	0.235	0.546

MT (Mental Toughness) is the mean of 20 items on a 1–4 Likert scale; higher values indicate greater MT. The modest reliability (α = 0.546) suggests measurement imprecision, and subsequent results should be interpreted with appropriate caution .

Table 2. Group Descriptive (Team vs Individual)

Sport Group	N	Mean	SD
Individual	65	2.894	0.233
Team	57	2.925	0.228

Mean MT scores for Team and Individual sports show minimal differences. Given the low reliability of the scale, these small observed differences should not be overinterpreted.

Table 3. Age Group Descriptive

Sport Group	N	Mean	SD
Adolescent (14-17)	21	2.918	0.285
Young Adults (18-28)	47	2.922	0.236

Age group means are nearly identical. The limited sample sizes, particularly for adolescents (n = 21), constrain the generalizability of these descriptive patterns.

Table 4. Per Sport Means (Desending)

Sport	N	Mean	SD
Judo	18	2.968	0.281
Futsal	38	2.956	0.265
Anggar	19	2.905	0.263
Rugby	19	2.862	0.163
Petanque	15	2.854	0.15
Jujitsu	13	2.821	0.177

Mean MT scores by sport lie in a narrow band, implying broadly comparable MT across sports in this event. We do not emphasize multi-group inference (e.g., ANOVA) here because (a) it is beyond the study's primary contrast (team vs individual), and (b) the overall reliability (α) is low, which may limit sensitivity to detect fine-grained multi-sport differences. The table is intended to guide practical reflection rather than formal rank-order claims.

Table 5. Group Comparison Tests (Team vs Individual)

Test	Value
t (Welch)	0.723
p (Welch)	0.471
Cohen's d	0.131
U (Mann–Whitney)	1988.0
p (M–W)	0.487

Both Welch's t-test and Mann-Whitney U test indicate no statistically significant difference in MT between team and individual athletes. The effect size (Cohen's d = 0.13) is small. However, the low reliability of the MT measure (α = 0.546) may have attenuated effect sizes and increased Type II error risk. Therefore, these non-significant results should be interpreted as preliminary rather than definitive evidence of no difference.

Table 6. Age Analyses (Correlation & t-test)

Test	Value
t (Welch)	0.723
p (Welch)	0.471
Cohen's d	0.131
U (Mann–Whitney)	1988.0
p (M–W)	0.487

The correlation between age and MT is negligible ($r \approx -0.009$), and the t-test shows no significant age group differences. The minimal effect sizes ($d \approx 0.01$) suggest no meaningful relationship between age and MT in this sample. However, the cross-sectional design and measurement limitations preclude strong conclusions about developmental patterns.

DISCUSSION

This study explored mental toughness (MT) in athletes at a regional multi-sport event in Indonesia, contrasting team and individual sports. Three core results emerged: (1) overall MT was moderate (M = 2.91/4); (2) there was no significant difference in MT between team and individual sports (Welch's t = 0.723, p = 0.471; Cohen's d = 0.13); and (3) age effects were minimal. However, these findings should be interpreted with caution due to the modest reliability of the MT measure (α = 0.546), which may limit the precision of these comparisons.

When contextualized within established MT frameworks such as Clough et al.'s (2002) 4Cs model (Challenge, Commitment, Confidence, and Control), our findings suggest that Indonesian athletes demonstrate relative strengths in Commitment (evidenced by discipline and persistence) but potential challenges in Control (particularly emotional control in post-error situations and under fatigue). The absence of sport-type differences aligns with recent syntheses suggesting that contextual and coaching factors may overshadow structural sport differences in MT development (Nicholls & Perry, 2016; Low et al., 2023).

The lack of age-related differences contrasts with some developmental frameworks (Wylleman, 2000) but supports other work showing that within competitive cohorts, experiential factors may outweigh chronological age in psychological development (Henriksen & Stambulova, 2023). In the Indonesian context, cultural values emphasizing discipline and collective responsibility may further homogenize MT development across age groups and sport types.

Our item-level analysis revealed specific micro-skills requiring development: post-error recovery, role clarity under pressure, and fatigue management. These findings align with the Control component of the 4Cs model and suggest targeted areas for intervention. The observed strengths in discipline and persistence provide a foundation for building these more specific MT skills.

Practical implications should therefore focus on developing these identifiable micro-skills rather than broad sport-type categorizations. Interventions targeting error recovery routines, pressure management techniques, and fatigue coping strategies would likely benefit athletes across both team and individual sports.

Methodologically, the low reliability of the adapted scale underscores the need for further validation of MT measures in Indonesian contexts. Future research should employ more robust measurement tools and consider facet-level analysis to detect potentially meaningful differences that composite scores may obscure.

CONCLUSION

Based on our results, we conclude that in this Indonesian multi-sport sample, global mental toughness was moderate and showed no significant differences between team and individual sports or across age groups. However, these null findings should be interpreted cautiously given measurement limitations. The most practical implications lie in addressing specific micro-skill deficits particularly in error recovery, pressure management, and fatigue coping-rather than focusing on broad sport categories. Methodologically, our results underscore the need for more reliable, culturally adapted MT instruments in Indonesian sports contexts. Future research should refine measurement tools, explore facet-level differences using established MT frameworks, and connect mental skills to objective performance metrics to strengthen ecological validity and practical application.

REFERENCE

Aizava, P. V. S., Codonhato, R., & Fiorese, L. (2023). Association of self-efficacy and mental toughness with sport performance in Brazilian futsal athletes. *Frontiers in Psychology*, *14*, 1195721.

Amorose, A. J., & Smith, P. J. (2003). Feedback as a source of physical competence information: Effects of age,

experience and type of feedback. *Journal of Sport and Exercise Psychology*, 25(3), 341-359.

Berliana, B., Hamzah, A., & Simbolon, M. (2021). Gender Issue in Masculine Sports in Indonesia: A Case Study. *Annals of Applied Sport Science*, 9(1), 1–9.

Clough, P., Earle, K., & Sewell, D. (2002). Mental toughness: The concept and its measurement. *Solutions in sport psychology*, *1*(1), 32-46.

Eather, N., Wade, L., Pankowiak, A., & Eime, R. (2023). The impact of sports participation on mental health and social outcomes in adults: a systematic review and the 'Mental Health through Sport'conceptual model. *Systematic reviews*, *12*(1), 102.

Fujak, H., Driesener, C., & Shilbury, D. (2025). Empirically testing for niche sports. *Sport Management Review*, 28(1), 51–72.

González-Hernández, J., Gomariz-Gea, M., Valero-Valenzuela, A., & Gómez-López, M. (2020). Resilient resources in youth athletes and their relationship with anxiety in different team sports. *International Journal of Environmental Research and Public Health*, 17(15), 1–11.

Gucciardi, D. F. (2017). Mental toughness: progress and prospects. *Current Opinion in Psychology*, 16, 17–23.

Gu, S., Bi, S., Guan, Z., Fang, X., & Jiang, X. (2022). Relationships among Sports Group Cohesion, Passion, and Mental Toughness in Chinese Team Sports Athletes. *International Journal of Environmental Research and Public Health*, 19 (22).

Henriksen, K., & Stambulova, N. (2023). The social environment of talent development in youth sport. *Frontiers in sports and active living*, *5*, 1127151.

Low, W. R., Freeman, P., Butt, J., Stoker, M., & Maynard, I. (2023). The role and creation of pressure in training: Perspectives of athletes and sport psychologists. *Journal of Applied Sport Psychology*, *35*(4), 710-730.

Luken, T. (2020). Easy does it: an innovative view on developing career identity and self-direction. *Career Development International*, 25(2), 130–145.

Martín-Rodríguez, A., Gostian-Ropotin, L. A., Beltrán-Velasco, A. I., Belando-Pedreño, N., Simón, J. A., López-Mora, C., ... & Clemente-Suárez, V. J. (2024). Sporting mind: the interplay of physical activity and psychological health. *Sports*, *12*(1), 37.

Nicholls, A. R., & Perry, J. L. (2016). Perceptions of coach–athlete relationship are more important to coaches than athletes in predicting dyadic coping and stress appraisals: an actor–partner independence mediation model. *Frontiers in psychology*, *7*, 447.

Nuss, K., & Li, K. (2021). Motivation for physical activity and physcial activity engagement in current and former wearable fitness tracker users: A mixed-methods examination. *Computers in Human Behavior*, 121, 106798.

Pluhar, E., McCracken, C., Griffith, K. L., Christino, M. A., Sugimoto, D., & Meehan III, W. P. (2019). Team sport athletes may be less likely to suffer anxiety or depression than individual sport athletes. *Journal of sports science & medicine*, *18*(3), 490.

Quartiroli, A., Wagstaff, C. R. D., Zakrajsek, R. A., Knight, S. M., & Etzel, E. F. (2022). The role of self-care and professional quality of life in sustaining a long-lasting career in sport psychology: A qualitative exploration. *Journal of Applied Sport Psychology*, 34(6), 1334–1351.

Sheridan, D., Coffee, P., & Lavallee, D. (2014). A systematic review of social support in youth sport. *Int Rev Sport Exerc Psychol*., 7, 198–228.

Varghese, M., Ruparell, S., & LaBella, C. (2022). Youth athlete development models: a narrative review. *Sports Health*, 14 (1), 20–29.

Veltmaat, A., Dreiskämper, D., Brueckner, S., Bondarev, D., Heyes, A., Barkoukis, V., Elbe, A. M., Lazuras, L., De Maria, A., Zelli, A., & Petróczi, A. (2023). Context matters: athletes' perception of dopers' values, actions and vulnerabilities. *Frontiers in Sports and Active Living*, 5.

Vostanis, P., Ruby, F., Jacob, J., Eruyar, Ş., Mironga Getanda, E., Haffejee, S., Krishna, M., & Edbrooke-Childs, J. (2022). Youth and professional perspectives of mental health resources across eight countries. *Children and Youth Services Review*, 136. Wallstam, M., & Kronenberg, K.

(2022). The Role Of Major Sports Events In Regional Communities: A Spatial Approach To The Analysis Of Social Impacts. *Event Management*, 26(5), 1025–1039.

Wixey Wixey, D., & Kingston, K. (2023). Identifying the psychological characteristics desired of elite youth athletes: toward an interdisciplinary approach to talent development. *Journal of Sport Behavior*, *46*(1), 93-109.

Wylleman, P. (2000). Interpersonal relationships in sport: uncharted territory in sport psychology research. *Int J Sport Psychol*., 31, 555–572.