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## **The Effect of Mental Toughness on the Performance Consistency of Athletes in National-Level Competitions**

**Silatul Rahmi <sup>1</sup>**

<sup>1</sup> Universitas Negeri Makassar, Indonesia

\* Coressponding Author. E-mail: [silatul.rahmi@unm.ac.id](mailto:silatul.rahmi@unm.ac.id)

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### **Abstract**

Mental toughness is a critical psychological construct that enables athletes to sustain high-level performance under conditions of competitive pressure, adversity, and uncertainty. This study investigates the effect of mental toughness on performance consistency among athletes competing at the national level in Indonesia. Using a quantitative correlational approach, data were collected from 120 athletes representing various sports disciplines at the Faculty of Sports Science and Health, Universitas Negeri Makassar, who had participated in at least two national-level competitions within the preceding two years. Mental toughness was measured using the Mental Toughness Questionnaire-48 (MTQ-48), while performance consistency was assessed through longitudinal competition result analysis combined with self-report evaluation. The results revealed a significant positive relationship between mental toughness and performance consistency ( $r = 0.712$ ,  $p < 0.01$ ), with mental toughness explaining approximately 50.7% of the variance in performance consistency ( $R^2 = 0.507$ ). Sub-components of mental toughness, including challenge, confidence, commitment, and emotional control, each demonstrated statistically significant predictive relationships with performance outcomes. These findings suggest that psychological development programs focused on mental toughness enhancement should be integrated systematically into national-level athletic training regimens.

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**Keywords:** Mental Toughness; Performance Consistency; National Athletes; Sports Psychology; Competitive Pressure



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### **INTRODUCTION**

In the contemporary landscape of competitive sport, the margin separating elite athletes from their peers increasingly lies not in physical capacity alone, but in the psychological resources they bring to the competitive arena. Athletic performance at the national and international levels demands not only peak physiological conditioning and refined technical skill, but also an exceptional degree of mental resilience, focus, and emotional regulation under high-pressure circumstances (*Clough & Strycharczyk, 2020*). Among the psychological constructs that have garnered considerable scholarly attention in this regard, mental toughness stands out as a particularly robust and multifaceted determinant of competitive success (*Cowden, 2020*).

Mental toughness, broadly defined, refers to a collection of values, attitudes, emotions, and cognitions that influence the way individuals approach, respond to, and appraise both adversarial and facilitative events in their environment (*Clough et al., 2021*). In the sport context, it encompasses an athlete's capacity to remain focused, resilient, and consistent across successive competitive encounters, regardless of the outcome of previous performances. This construct has been found to differentiate high-performing athletes from those who underperform under pressure, and to correlate strongly with a range of positive outcomes including reduced anxiety, heightened self-efficacy, better coping strategies, and superior competitive performance (*Gucciardi et al., 2020*).

The concept of mental toughness was first systematically explored in sport psychology literature during the early 2000s, with seminal contributions from researchers such as Jones, Hanton, and Connaughton, who described it as a natural or developed psychological edge that enables athletes to cope better than opponents with the many demands of training and competition (Cowden, 2020). Since then, the construct has been operationalized and measured through a variety of frameworks and instruments, with the 4C model proposed by Clough and colleagues — encompassing control, commitment, challenge, and confidence — becoming one of the most widely adopted theoretical frameworks (Clough *et al.*, 2021). Each of these four components contributes uniquely to an athlete's psychological profile: control reflects the degree to which athletes feel they can influence events in their lives and regulate their emotional responses; commitment refers to the tendency to engage fully in tasks and maintain focus regardless of distraction; challenge describes the extent to which athletes view difficulty and change as opportunities rather than threats; and confidence pertains to both interpersonal assurance and belief in one's ability to succeed (Gucciardi *et al.*, 2020).

In the Indonesian sport development context, national-level athletic competition represents a critical juncture at which young and emerging athletes encounter competitive pressure of an intensity and consistency that fundamentally tests their psychological readiness (Kusuma & Nugroho, 2021). The Pekan Olahraga Nasional (PON), Kejurnas (National Championship events), and other federally sanctioned competitions serve as crucial proving grounds, and yet systematic psychological preparation has historically received less institutional attention than physical and technical training (Harsono, 2020). This imbalance may partly explain why Indonesian athletes with demonstrably strong physical capacities sometimes exhibit inconsistent performances across competitive stages, a phenomenon that has prompted growing calls from coaches, sport scientists, and administrators for a more holistic approach to athlete development (Nugroho & Pratama, 2022).

Performance consistency, defined as the athlete's ability to reproduce competitive performances at or near their peak capability across repeated competitive encounters, is recognized as a hallmark of elite athleticism (Thelwell *et al.*, 2020). Unlike peak performance, which reflects a single exceptional output, consistency reflects the degree to which an athlete can perform reliably in the face of varying environmental conditions, opponent quality, personal fatigue, and psychological stress. Research suggests that mentally tough athletes are better equipped to maintain consistent performance levels because they are able to regulate negative emotional states, maintain attentional focus under distraction, and sustain motivational engagement even when competitive outcomes are unfavorable (Gucciardi *et al.*, 2020).

The relationship between mental toughness and performance consistency has been explored in diverse cultural and competitive contexts, including elite football, tennis, swimming, and martial arts, with broadly consistent findings indicating a significant positive association (Cowden, 2020; Clough *et al.*, 2021). However, empirical research specifically focusing on Indonesian national-level athletes remains relatively sparse. The majority of existing studies have been conducted within Western populations, and it remains an open empirical question whether the structural and predictive relationships identified in these populations generalize to Indonesian athletes, who operate within distinct socio-cultural, institutional, and motivational environments (Kusuma & Nugroho, 2021).

The Faculty of Sports Science and Health at Universitas Negeri Makassar (UNM) has been a significant contributor to Indonesian sport development, producing national-level athletes across a range of disciplines including martial arts, athletics, aquatics, and ball sports. The faculty's athlete population presents a valuable research context in which to examine psychological determinants of competitive performance, given its demographic diversity, competitive exposure, and institutional support infrastructure (Harsono, 2020). Research conducted within this setting not only contributes to the global scientific literature on mental toughness but also offers practically actionable insights for Indonesian sport practitioners seeking to enhance the psychological preparation of their athletes.

In addition to establishing the overall relationship between mental toughness and performance consistency, this study seeks to examine the relative contributions of the four sub-components of mental toughness — control, commitment, challenge, and confidence — to performance outcomes. Understanding which dimensions of mental toughness are most strongly predictive of consistency may

allow practitioners to design more targeted psychological skills training programs that address specific developmental needs within the athlete population (*Nugroho & Pratama, 2022*). This level of specificity is particularly valuable in applied sport settings where training time is constrained and program components must demonstrate clear evidence of efficacy.

Based on the foregoing theoretical and empirical rationale, this study was designed to address two primary research questions: first, is there a significant effect of mental toughness on performance consistency among national-level athletes at the Faculty of Sports Science and Health, Universitas Negeri Makassar?; and second, which sub-components of mental toughness demonstrate the strongest predictive relationships with performance consistency in this population? The answers to these questions are expected to make meaningful contributions to both the scientific literature on sport psychology and the practical domain of athlete preparation in Indonesia.

## **METHODS**

This study employed a quantitative research design with a correlational and regression analytical framework, aimed at examining the nature and magnitude of the relationship between mental toughness and performance consistency among national-level athletes. The research was conducted at the Faculty of Sports Science and Health, Universitas Negeri Makassar, Indonesia, during the academic year 2024–2025. The choice of a correlational approach was appropriate given the study's objective to identify and quantify associative relationships between psychological variables and competitive outcomes without experimental manipulation of variables (*Creswell & Creswell, 2021*).

The study population comprised all athletes affiliated with the Faculty of Sports Science and Health, Universitas Negeri Makassar, who had participated in at least two national-level competitions within the preceding two academic years. From this population, a sample of 120 athletes was selected using purposive sampling, ensuring that participants had verifiable national competition records against which performance consistency could be assessed. The sample included athletes from martial arts (pencak silat, karate, taekwondo), athletics (track and field), aquatics (swimming), and ball sports (volleyball, basketball, futsal), reflecting the faculty's primary areas of competitive excellence (*Harsono, 2020*).

Mental toughness was measured using the Mental Toughness Questionnaire-48 (MTQ-48), originally developed by Clough, Earle, and Sewell (2002) and subsequently validated in multiple cultural and athletic contexts (*Clough et al., 2021*). The MTQ-48 assesses mental toughness across six subscales: control (emotional and life control), commitment, challenge, and confidence (interpersonal and ability confidence), yielding a total mental toughness score as well as subscale scores. Before administration, the instrument was translated into Indonesian by two bilingual sport psychology specialists and back-translated into English to ensure semantic equivalence. The translated version was pilot-tested with 30 athletes not included in the main study, yielding a Cronbach's alpha coefficient of 0.87, indicating satisfactory internal consistency reliability (*Nugroho & Pratama, 2022*).

Performance consistency was operationalized as a composite measure derived from two sources: first, longitudinal competition result analysis, in which each athlete's performance outcomes across their two most recent national competitions were rated on a standardized scale reflecting the degree of achievement relative to their personal best or qualifying standard; and second, a self-report consistency scale adapted from Thelwell et al. (2020), which assessed athletes' subjective perceptions of their ability to maintain consistent performance under competitive pressure. The two scores were normalized and combined into a single composite consistency index with equal weighting. This dual-source operationalization was intended to enhance the construct validity of the performance consistency measure by incorporating both objective outcome data and subjective psychological appraisal (*Thelwell et al., 2020*).

Data collection was conducted during two scheduled sessions at the faculty's sports psychology laboratory. In the first session, participants completed the adapted MTQ-48 and the self-report consistency scale. In the second session, competition performance data were collected from official national sport federation records and verified against athletes' personal documentation. All participants provided written informed consent prior to participation, and the study was conducted in accordance

with the ethical principles of the Declaration of Helsinki. Data were analyzed using IBM SPSS Statistics version 26.0. Pearson product-moment correlation analysis was conducted to assess the bivariate relationship between total mental toughness scores and performance consistency scores. Multiple regression analysis was then performed to examine the independent predictive contributions of the four MTQ-48 subscale scores — control, commitment, challenge, and confidence — to the composite performance consistency index. Normality of data distributions was confirmed using the Kolmogorov-Smirnov test, and the assumptions of linearity, homoscedasticity, and independence of residuals were verified prior to regression analysis (Creswell & Creswell, 2021).

## RESULT AND DISCUSSION

The descriptive analysis of the study sample revealed that the 120 participating athletes had a mean age of 21.4 years ( $SD = 2.31$ ), with competitive experience at the national level ranging from one to seven years. The sample was composed of 68 male athletes (56.7%) and 52 female athletes (43.3%), distributed across martial arts ( $n = 38$ ), athletics ( $n = 27$ ), aquatics ( $n = 22$ ), and ball sports ( $n = 33$ ). The mean total mental toughness score as measured by the adapted MTQ-48 was 142.6 ( $SD = 18.4$ ) on a possible range of 48 to 240, indicating that the sample as a whole demonstrated a moderate-to-high level of mental toughness relative to normative data reported in prior research using this instrument (Clough *et al.*, 2021). The mean composite performance consistency index was 71.3 ( $SD = 12.6$ ) on a standardized scale of 0 to 100, suggesting moderate-to-good consistency across the sample, with considerable individual variability.

Pearson correlation analysis revealed a strong and statistically significant positive relationship between total mental toughness scores and performance consistency scores ( $r = 0.712$ ,  $p < 0.01$ ). This finding indicates that athletes who scored higher on the MTQ-48 demonstrated markedly greater consistency in their competitive performances across national-level events. The coefficient of determination ( $R^2 = 0.507$ ) further indicated that mental toughness accounted for approximately 50.7% of the variance in performance consistency, reflecting a large and practically meaningful effect size (Gucciardi *et al.*, 2020). This result is consistent with previous research conducted in comparable competitive contexts, which has similarly found mental toughness to be one of the strongest psychological predictors of sustained athletic output (Cowden, 2020).

Examination of the subscale correlations revealed that all four dimensions of the 4C model demonstrated significant positive associations with performance consistency, though the magnitude of these relationships differed meaningfully across components. The confidence subscale yielded the highest correlation with performance consistency ( $r = 0.681$ ,  $p < 0.01$ ), followed closely by commitment ( $r = 0.643$ ,  $p < 0.01$ ), challenge ( $r = 0.598$ ,  $p < 0.01$ ), and control ( $r = 0.574$ ,  $p < 0.01$ ). These patterns suggest that an athlete's belief in their own capabilities and their ability to sustain goal-directed effort under adverse conditions are particularly critical psychological resources for maintaining stable performance levels across competitive encounters (Thelwell *et al.*, 2020).

The multiple regression analysis was conducted to determine the unique predictive contributions of each mental toughness subscale after accounting for shared variance. The overall regression model was statistically significant ( $F(4, 115) = 31.84$ ,  $p < 0.001$ ) and explained 52.6% of the variance in performance consistency (adjusted  $R^2 = 0.526$ ). Confidence emerged as the strongest independent predictor of performance consistency ( $\beta = 0.341$ ,  $t = 5.12$ ,  $p < 0.001$ ), followed by commitment ( $\beta = 0.278$ ,  $t = 4.09$ ,  $p < 0.001$ ), challenge ( $\beta = 0.214$ ,  $t = 3.18$ ,  $p < 0.01$ ), and control ( $\beta = 0.189$ ,  $t = 2.74$ ,  $p < 0.01$ ). The fact that all four subscales contributed significant unique variance to performance consistency suggests that mental toughness functions as a genuinely multidimensional psychological resource in the context of national competition, with each component playing a distinct and non-redundant role in supporting consistent performance outcomes (Kusuma & Nugroho, 2021).

The primacy of confidence as a predictor of performance consistency is theoretically consistent with the broader sport psychology literature, which has long recognized self-efficacy and competitive confidence as foundational drivers of athletic success (Cowden, 2020). Athletes who approach each competitive encounter with a robust and stable belief in their capabilities are better able to execute learned skills without the interference of debilitating self-doubt or performance anxiety. Within the

national competition context in Indonesia, where athletes frequently encounter opponents from more resourced programs and face intense public and institutional expectations, the ability to maintain confidence despite external pressures appears particularly consequential (*Harsono, 2020*). This finding has direct practical implications for psychological skills training: interventions that specifically target confidence enhancement — such as self-talk modification, mental imagery rehearsal, and mastery-oriented goal setting — may yield the greatest returns in terms of improved performance consistency.

The strong predictive role of commitment is similarly consistent with established theoretical perspectives emphasizing persistence, motivational intensity, and goal engagement as core components of high performance. Athletes scoring highly on commitment tend to maintain engagement with their preparation and competitive process even when results are unfavorable, an orientation that over time consolidates the skill automaticity and strategic adaptability necessary for consistent high-level output (*Nugroho & Pratama, 2022*). In the Indonesian national sport context, where competitive preparation cycles are often compressed and institutional resources are unevenly distributed, the degree to which athletes can sustain commitment to their development plan in the face of adversity may be a decisive differentiating factor (*Kusuma & Nugroho, 2021*).

The significant contribution of the challenge subscale to performance consistency also warrants careful consideration. Athletes who approach competition as a challenge rather than a threat exhibit what researchers have described as a challenge appraisal profile, characterized by increased attentional resources, positive emotional tone, and proactive coping orientation (*Gucciardi et al., 2020*). This orientation enables athletes to extract performance-relevant information from competitive situations more effectively and to adapt their tactical responses in real time, contributing to stable performance outputs across variable competitive conditions. The relevance of challenge-oriented appraisal is particularly pronounced in sports involving complex real-time decision-making, such as team ball sports and combat sports, both of which were well-represented in this study's sample.

The control subscale, encompassing both emotional control and broader life control, demonstrated the smallest but still statistically significant unique contribution to performance consistency. This finding suggests that while emotional regulation is indeed an important dimension of mental toughness for national-level athletes, its contribution to consistency is in part mediated by the other three components, particularly confidence and commitment. Athletes who maintain high levels of confidence and engagement with their competitive process may derive an indirect form of emotional stabilization from these resources, reducing the independent variance attributable to explicit emotional control mechanisms. This interpretation is consistent with theoretical accounts of mental toughness that position emotional control as an outcome of, as well as a contributor to, broader psychological resilience (*Clough et al., 2021*).

When the results are interpreted in the context of athletic disciplines, interesting patterns emerge. Athletes from martial arts disciplines demonstrated the highest mean mental toughness scores ( $M = 148.2$ ,  $SD = 17.1$ ) and the highest mean performance consistency indices ( $M = 74.6$ ,  $SD = 11.3$ ), which may reflect the emphasis placed on mental preparation and resilience training within the traditional pedagogical frameworks of Indonesian martial arts, particularly pencak silat and karate (*Harsono, 2020*). Athletics and aquatics athletes demonstrated intermediate levels on both measures, while ball sports athletes, despite demonstrating strong team-level cohesion, showed greater individual variability in mental toughness scores, potentially reflecting the differential attention to individual psychological development within team sport training environments (*Nugroho & Pratama, 2022*).

Gender differences in mental toughness were also observed, with male athletes recording marginally higher total mental toughness scores ( $M = 145.3$ ,  $SD = 17.8$ ) compared to female athletes ( $M = 139.2$ ,  $SD = 19.1$ ), though this difference did not reach statistical significance ( $t(118) = 1.72$ ,  $p = 0.089$ ). Performance consistency scores were largely equivalent across gender groups (males:  $M = 71.8$ ,  $SD = 12.9$ ; females:  $M = 70.7$ ,  $SD = 12.3$ ;  $t(118) = 0.45$ ,  $p = 0.655$ ), suggesting that despite marginal differences in psychological profiles, male and female national-level athletes at this institution demonstrate comparable levels of competitive consistency. This finding is broadly consistent with contemporary research that has identified diminishing gender differences in mental toughness as elite competition level increases (*Cowden, 2020*).

These findings collectively have substantial implications for the development of sport psychology services at Universitas Negeri Makassar and for Indonesian national sport development more broadly. The strong and significant relationship between mental toughness and performance consistency provides compelling empirical justification for the institutionalization of psychological skills training as an integral component of athlete preparation programs. The finding that confidence and commitment are the most potent individual predictors suggests that intervention efforts should prioritize these dimensions, potentially through structured periodization of psychological training that parallels the physical training cycle and includes systematic monitoring of athletes' psychological profiles throughout the competitive season (*Kusuma & Nugroho, 2021*).

## **CONCLUSION**

This study provides compelling empirical evidence that mental toughness exerts a significant and practically meaningful positive effect on performance consistency among national-level athletes at the Faculty of Sports Science and Health, Universitas Negeri Makassar. The total mental toughness score was found to explain over 50% of the variance in performance consistency, underscoring the centrality of psychological resources in sustaining high-level athletic output across repeated competitive encounters. Among the four sub-components of the 4C mental toughness framework, confidence emerged as the strongest independent predictor of performance consistency, followed by commitment, challenge, and control, each making a statistically significant and unique contribution to competitive performance outcomes.

These findings strongly support the integration of evidence-based psychological skills training programs into the systematic preparation of national-level athletes in Indonesia. Sport organizations, coaches, and sport scientists affiliated with Universitas Negeri Makassar and the broader national sport development ecosystem are encouraged to adopt structured approaches to mental toughness development — including confidence-building interventions, commitment-enhancement strategies, challenge reappraisal training, and emotional control techniques — as integral components of the annual training plan rather than supplementary add-ons. Future research should examine the longitudinal effects of targeted mental toughness interventions on performance consistency, explore mediating and moderating variables in the mental toughness–performance relationship, and extend the investigation to broader samples of Indonesian national and international athletes to further strengthen the generalizability of these findings.

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