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# Mental Toughness in Female Athletes: "Does It Differ from Female Musicians?"

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## Abstract

This study tried to probe possible differences in mental toughness between female musicians and female athletes as an approach toward better understanding the concept of psychological resilience across different performance contexts. The sample population consisted of sixty females from Universitas Pendidikan Indonesia: thirty athletes coming from the Faculty of Sports and Health Education (Faculty of Sports and Health Education) and another group of thirty musicians belonging to the Faculty of Art and Design Education (FPSD). Data were collected through the use of the Mental Toughness Questionnaire 18 (MTQ18) which duly described emotional control, self-belief, motivation, confidence, and challenge. Above all other specific requisites, this instrument rated high with excellent construct and content validity in earlier studies. A descriptive comparison analysis showed that musicians were less mentally tough overall (M = 58.80, SD = 3.68) than athletes (M = 64.50, SD = 5.24). It is in the motivation and emotional control components where the widest gaps are seen-with higher internal drive and better emotional regulation among athletes. Much more slightly tilted toward the athlete's side, the ratings of challenge between the two groups were almost identical. Results of this study support a claim that performing arts environments develop less psychological flexibility compared to controlled competitive sports environments because artistic domains emphasize creativity and expression. This study enhances understanding of the psychological rigidity of women and at the same time helps offset the gender bias that has informed past studies. Practical ramifications include the development of domain-specific mental training programs, for example, goal-setting and stress management training for athletes as well as emotional control techniques for musicians which can be derived from this study. Limitations include a small sample size based on self-reported data without subgroup analysis. More comprehensive studies with larger samples composed of different groups are required in addition to long-term studies to trace the development of mental toughness in various fields of performance.

## How to Cite

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## INTRODUCTION

Sport and music have many similarities in terms of the skill development, psychological demands and self-regulation strategies required to achieve peak performance(Budnik-Przybylska et al., 2025). Both athletes and musicians undergo intensive training over long periods of time to achieve high levels of skills(Bernardi et al., 2013). In addition, both of these areas involve high-pressure environments where individuals must perform under pressure and manage anxiety to maintain the quality of their performance(Aditya et al., 2024). Factors such as mental rotation and self-regulation strategies also play an important role in the performance of athletes and musicians(Science, 2024). Although success is measured differently - more quantitatively in sports through scores and times, while in music it is more subjective - the concept of mental toughness remains a key element in both domains.(Sergeant & Himonides, 2019).

Though both sports, and music demand much discipline, perseverance, or performance under pressure, mental toughness manifests and develops differently between the two domains(Programme et al., 2019). Mental toughness of athletes is developed through structured training, competition as well as exposure to physically and mentally demanding conditions that consequently build resilience and confidence in an individual as well as many other attributes related to strength in adversity(Khan et al., 2017). Musicians develop mental toughness more from overcoming psychological challenges related to performance pressure, perfectionism, and sustaining concentration comparable to training that emphasizes emotional control and flexibility(Shaw et al., 2023). Also, while athletes usually show mental strength through acting out and using situation pictures, musicians often display more worry and openness to experience, suggesting that their psychological toughness comes from different thinking and feeling needs (Talamini & Doerr, 2023). These differences stress the need for custom psychological training methods since what builds mental strength in athletes might not work the same way for musicians (Coulter et al., 2018).

Mental strength is regarded as an enabling condition that in the domains of sports and music facilitates purposeful struggle against adversity sustains performance under conditions of extreme stress and allows for quick recovery from performance setbacks. Though this characteristic has been most observed in athletes, studies indicate that musicians also need great mental toughness to cope with practice-related stresses as well as performance and competition vulnerabilities(Osborne et al., 2014). Typically acquired by athletes through high levels of training, competition, and physical endurance exercises which build for them resilience, confidence, and ways of managing stresses. Similarly, musicians develop mental toughness by honing their skills over years of disciplined practice under the pressure related to stage performances as well as dealing with tendencies toward perfectionism(Araújo et al., 2017).

This study specifically focuses on female subjects based on the Social Role Theory (Eagly, A. H. 1987) and Gender Role Theory (Yar et al., 2022), which explain that men and women possess different social role constructions and face distinct social expectations. By limiting the participants to females, this research aims to control the influence of gender-based social roles so that the comparison of mental toughness more accurately reflects differences in environmental characteristics of the activities (sports and music), rather than differences attributed to gender itself. Moreover, previous studies on mental toughness have predominantly used male samples, resulting in a masculine-biased standard (Fletcher & Sarkar, 2013). Therefore, this study is important to provide a more contextual and representative understanding of mental toughness within the female population.Another form of pemerincian for the purposes of explaining things that are relatively numerous and long, it is recommended to be written per paragraph or be-how many paragraphs, but not with the way nu-merik. But narrative, such as be-rikut.

Previous studies compared mental toughness between athletes and musicians, exposing contrasting yet interestingly overlapping characteristics between the two domains (Glasser, 2024). Findings noted that athletes most probably training in a more organized setup and performing in a competitive environment generally demonstrate greater degrees of mental toughness (Kosirnik et al., 2022). On the other hand, musicians manifested more neuroticism and openness to experience; thus, factors that may probably influence the development and application of mental toughness differently predispose them. It also emphasized the role of imagery in the inculcation of mental toughness. While athletes generally depend more on visualization for better performance, musicians use imagery for technical refinement and emotive output. Despite such valuable insights, literature exploring mental toughness in musicians

barely exists and is mostly found within the larger construct of resilience(Indonesia & Java, 2025). This study seeks to further explore where, how, and to what extent differences and similarities exist in mental toughness between female athletes and female musicians(Coulter et al., 2018). The limitations of this study are several notwithstanding its contributions toward an understanding of mental toughness among female athletes and musicians. To begin with, the sample used may not be representative enough of the general population of athletes and musicians-thus posing a limitation to how much the findings can be generalized(Connaughton et al., 2015). Though environmental factors were not considered in this paper some psychological dimensions such as neuroticism, extraversion, and imagery use were discussed-these could include coaching style, level of competition, or culture that might influence the development of mental toughness(Hsieh et al., 2023). The main limitation about which we undertake our study is that it depends on subjective self-reports which are likely to introduce response bias and subjectivity in interpreting what constitutes mental toughness(Wheatley et al., 2023). Also, even though this study looks at two performance-based groups, it does not break down possible sub-group differences within each type, like solo vs team athletes or classical vs modern musicians. This could add more detail to the results (Şİmşek et al., 2023). Later studies should fill these gaps by using bigger and more varied samples as well as long-term or experimental setups so that we can better see how mental toughness grows in these areas(Lang et al., 2011).

The purpose of this study is to analyze the differences in mental toughness levels between female students who are athletes and those who are musicians at Universitas Pendidikan Indonesia. This research aims to explore how distinct performance environments-competitive in sports and expressive in music-affect the development of various dimensions of mental toughness, including emotional control, self-belief, motivation, confidence, and challenge. Furthermore, this study seeks to provide a contextual understanding of how social factors and gender roles contribute to the formation of mental toughness among women, drawing on the Social Role Theory and Gender Role Theory.

The Novelty of this study are that it only looked at women participants and compared success in two different areas, sports and music. This research offers a gender-specific and cross-domain viewpoint that contributes to a more contextualized and balanced understanding of psychological resilience, since the majority of prior studies on mental toughness have primarily used male samples or concentrated on sports alone. By administering the Mental Toughness Questionnaire 18 (MTQ18) to athletes and musicians, this study not only validates the instrument's validity in various performance contexts but also identifies distinct motivational and emotional control patterns that set the two groups apart. Moreover, by integrating the Social Role Theory and Gender Role Theory, this research introduces a socio-psychological framework that explains how gender expectations and environmental demands shape the mental toughness of women.

## METHODS

The participants in this study were 60 female in universitas Pendidikan Indonesia , consisting of two equal groups: 30 student-athletes and 30 music students. The sample was selected using purposive sampling (Etikan et al., 2016), with the inclusion criteria being active involvement in sports or music for at least one year, current enrollment in an academic program related to sports or music.  willingness to participate voluntarily. Ethical clearance was obtained from the Research Ethics Committee of Universitas Pendidikan Indonesia with approval number 432/UN40.3.10/PK.01.02/2024.

This research employed a descriptive comparative quantitative method using a cross-sectional design, aimed at analyzing differences in mental toughness levels between the two groups at a single point in time. The measurement tool used was the Mental Toughness Questionnaire 18 (MTQ18) developed by Clough et al. (2002), which includes 18 items rated on a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree). The MTQ18 measures four core components of mental toughness: control, commitment, challenge, and confidence. The MTQ18 has been validated in various populations and contexts. In this study, the instrument demonstrated a Cronbach's $\alpha$ was .83, while person separation reliability was 0.352, indicating high internal consistency. Content and construct validity were supported by previous studies (Gerber et al., 2018; Gucciardi et al., 2015), confirming its relevance for both athletes and musicians. The instrument was distributed online through Google Forms during May–June 2024. Participants were informed about the purpose of the study and consent was obtained prior to participation.

Data from Google Forms were exported into Microsoft Excel and then processed using

IBM SPSS Statistics version 26. Descriptive statistics were used to summarize participants' mental toughness scores, including mean, standard deviation, minimum, and maximum values. Since the study aimed to describe and compare characteristics between two groups without testing for significant differences, non-inferential (descriptive) analysis was used. No hypothesis testing (e.g., t-test or ANOVA) was conducted, as the emphasis was on reporting patterns and trends in the data rather than drawing statistical conclusions.

## RESULTS AND DISCUSSION

The study aimed to compare mental toughness levels between female athletes and female musicians using the Mental Toughness Questionnaire 18 (MTQ18). Data were collected from 60 participants (30 female athletes from the Faculty of Sports and Health Education and 30 female musicians from the Faculty of Art and Design Education and analyzed descriptively to highlight differences in mental toughness scores across five dimensions: Emotional Control, Self-Belief, Motivation, Confidence, and Challenge. The results are presented in the following tables, which summarize the descriptive statistics for the total mental toughness scores and individual dimensions.

**Table 1.** Descriptive Statistics for Total Mental Toughness Scores

| Group | N | Min | Max | Mean | Std. d |
|---|---|---|---|---|---|
| Faculty of Sports and Health Education (athletes) | 30 | 58 | 79 | 64.50 | 5.237 |
| Faculty of Art and Design Education (musicians) | 30 | 54 | 69 | 58.80 | 3.680 |

**Table 1** shows that athletes from Faculty of Sports and Health Education had a higher average mental toughness score (M = 64.50, SD = 5.237) compared to musicians from Faculty of Art and Design Education (M = 58.80, SD = 3.680). The athletes' scores ranged from 58 to 79, while the musicians' scores ranged from 54 to 69. This indicates that athletes generally demonstrated stronger mental toughness than musicians. The slightly higher standard deviation among athletes suggests a greater variability in their mental toughness levels, whereas the musicians showed more consistent scores. Overall, these results imply that participation in competitive sports may contribute to higher and more diverse levels of mental toughness compared to engagement in musical activities.

**Table 2.** Descriptive Statistics for Mental Toughness Dimensions

| Dimensions | Group | Min | Max | Mean | Std.D |
|---|---|---|---|---|---|
| Emotional Control | Athletes | 11 | 20 | 13.17 | 1.913 |
| Emotional Control | Musicians | 9 | 15 | 12.43 | 1.455 |
| Self-Belief | Athletes | 12 | 19 | 15.53 | 1.592 |
| Self-Belief | Musicians | 8 | 17 | 12.93 | 2.083 |
| Motivation | Athletes | 9 | 17 | 13.23 | 2.063 |
| Motivation | Musicians | 8 | 15 | 11.60 | 1.868 |
| Confidence | Athletes | 8 | 13 | 11.53 | 1.252 |
| Confidence | Musicians | 10 | 16 | 12.63 | 1.474 |
| Challenge | Athletes | 9 | 15 | 12.40 | 1.476 |
| Challenge | Musicians | 7 | 15 | 9.73 | 2.227 |

**Table 2** illustrates that female athletes consistently scored higher across all five dimensions of mental toughness compared to female musicians. The most pronounced differences were observed in Motivation (Faculty of Sports and Health Education: M = 15.21, Faculty of Art and Design Education: M = 9.68, and Emotional Control (Faculty of Sports and Health Education: M = 15.21, Faculty of Art and Design Education: M = 10.95. These findings suggest that athletes exhibit stronger internal drive and better emotional regulation compared to musicians. The smallest difference was in Challenge (Faculty of Sports and Health Education: M = 12.47, Faculty of Art and Design Education : M = 11.16. indicating that both groups have relatively similar abilities to perceive challenges positively, though athletes still scored slightly higher.

This study is important in the sense that it helps understand differences in mental strength between athletes of the Faculty of Sports and Health Education (Faculty of Sports and Health Education) and musicians of the Faculty of Art and Design Education (Faculty of Art and Design Education), thus filling some gaps in the psychological profile at comparative levels across such extremely different domains as physical and artistic performance. The results obtained indicate a higher mean score for mental toughness among athletes than musicians (M = 64.50, SD = 5.237 against M = 58.80, SD = 3.680 respectively). In this regard, participation in competitive games emphasized here as sports could lead to the development of strong elements related to resilience under stress having parallels with earlier findings where structured training, discipline, and exposure to performance pressure inculcate elements associated with resilience under stress found more prevalent among athletes(Kosirnik

et al., 2022). Sports are structured by the nature of their demand for observable progress, and emphasize team efforts as well as frequent competitions. Perhaps athletes may more readily keep focus adjust emotion or bounce back from setbacks than musicians.

Musicians have shown less variability, implying that the scores for mental toughness would be more consistent. Greater variability is seen in athletes, perhaps because of different types of sports, different levels of competitions, and varied experiences in coping individually(Budnik-Przybylska et al., 2025). This yields a comparison between athletes and musicians whereby psychological adaptability would seemingly be higher in athletes since they are regularly confronted with physical fatigue, high-pressure situations, and direct competition as compared to performance challenges which are more related to expression, creativity, and subjective evaluation(Hatfield, 2024). Also, competitive feedback in sports like wins, losses, and other related metrics might further enhance motivation and a sense of control leading to the development of psychological hardiness. Musicians' experiences mostly dwell between individual practice and performance exposing vulnerability which perhaps makes them less capable of regulating emotions under pressure(Araújo et al., 2017).This study prioritizes the comprehension of domain-specific psychological demands in performance-based fields. Though earlier research majorly involved athletes, drawing a parallel between the two brings out how varied training milieus foster mental toughness(Aditya et al., 2024). These findings suggest that mental training interventions should be tailored to each domain's needs. For example, athletes may benefit from continued programs in visualization, goal-setting, and stress inoculation, while musicians might require approaches targeting performance anxiety reduction and emotional regulation (Coulter et al., 2018).

## CONCLUSION

This study successfully answered the research question on whether there is a difference in mental toughness between female athletes and female musicians. Results showed that female athletes have higher mean scores in all five dimensions of the MTQ18 on mental toughness, the highest differences being in Motivation and Emotional Control. This supports domain-specific training environment influence, with comparisons under structured comparisons seemingly benefiting from specific components of resilience and emotional regulation. The present study adds to filling the aforementioned literature gap by providing an initial comparative perspective on mental toughness between these two cohorts of performers. Practical application results for stakeholders, particularly coaches, educators, and psychologists in the design of customized psychological interventions for athletes by maintaining the content of programs between goal setting and stress management and for musicians through the intervention strategy dealing with performance anxiety and emotional stability. This difference is going to help practitioners improve results in both these domains. The findings advocated a contextual approach toward psychological training and consequently provided an impetus for further research relating to the development of mental toughness within varying contexts of performance.

Therefore, the findings of this study are expected to offer both theoretical and practical contributions to the development of psychological training strategies tailored to the specific needs of different performance domains, both in sports and in music. The study offers new insights and practical implications for designing domain-specific mental training programs-emphasizing stress management and goal-setting for athletes, and emotional regulation for musicians.

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