



## **PSYCHOLOGICAL PREDICTORS OF MENTAL TOUGHNESS AMONG COMPETITIVE BADMINTON PLAYERS IN LUCKNOW, UTTAR PRADESH**

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### **Abstract**

Mental toughness is an important psychological resource that enables athletes to maintain concentration, confidence, emotional control and persistence when confronted with competitive pressure. Badminton is physically demanding and psychologically challenging because players must make rapid decisions, recover from mistakes and sustain performance throughout competition. The present study was designed to examine the relationship of competitive anxiety, self-efficacy and psychological resilience with mental toughness among badminton players in Uttar Pradesh. A sample of 200 competitive badminton players was proposed, comprising male and female players from different districts of Uttar Pradesh. Participants were assessed using standardized measures of competitive anxiety, self-efficacy, psychological resilience and mental toughness. Descriptive statistics, Pearson product-moment correlation and multiple regression analysis were proposed. The illustrative findings suggest that mental toughness is positively associated with self-efficacy and resilience, whereas competitive anxiety demonstrates a negative association with mental toughness. Regression analysis further indicates that self-efficacy and resilience may positively contribute to mental toughness, while competitive anxiety may function as a negative predictor. These findings highlight the importance of psychological preparation alongside physical and technical training in badminton.

**Keywords:** Badminton, mental toughness, competitive anxiety, self-efficacy, psychological resilience, sports psychology, Uttar Pradesh

### **Introduction**

Competitive sport requires considerably more than physical fitness and technical competence. Athletes must perform under conditions involving uncertainty, evaluation, pressure, fatigue and the possibility of failure. Psychological characteristics therefore influence how effectively physical and technical abilities are translated into competitive performance.

Badminton is an individual or doubles sport characterized by rapid movements, repeated changes in direction, quick reactions and continuous decision-making. Unlike some team sports, an individual badminton player has limited opportunity to depend on teammates during critical moments. A player's response to an unforced error, loss of a point, change of momentum or difficult opponent can influence subsequent performance. Psychological characteristics such as confidence, emotional regulation, resilience and the ability to remain focused under pressure are therefore particularly relevant.

Mental toughness refers broadly to an athlete's capacity to remain psychologically effective when experiencing demanding, stressful or adverse competitive circumstances. A mentally tough athlete may be better able to maintain concentration, regulate emotions, demonstrate confidence and continue purposeful effort despite setbacks.

Mental toughness does not develop independently of other psychological characteristics. Self-efficacy concerns an individual's belief in the capacity to successfully perform particular actions or meet specific demands. Psychological resilience concerns adaptation and recovery following adversity. Competitive anxiety, in contrast, can involve worry, physiological activation and concerns about performance evaluation and may interfere with attention and decision-making when excessive.

The present study therefore examines competitive anxiety, self-efficacy and psychological resilience as correlates and potential predictors of mental toughness among badminton players in Uttar Pradesh.



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## Rationale of the Study

Badminton has a substantial competitive presence at school, university, district, state and national levels in India. Players may possess strong technical and physical abilities but still perform inconsistently because of fear of losing, reduced confidence after errors, difficulty recovering from defeat or inability to maintain concentration during crucial points.

Studying the psychological correlates of mental toughness can provide useful information for coaches, sports psychologists and badminton academies. Identifying psychological characteristics associated with stronger mental toughness can support more comprehensive athlete-development programmes.

## Objectives

- To examine the level of mental toughness among badminton players in Uttar Pradesh.
- To examine the relationship between competitive anxiety and mental toughness among badminton players.
- To investigate the relationship between self-efficacy and mental toughness among badminton players.
- To examine the relationship between psychological resilience and mental toughness among badminton players.
- To determine whether competitive anxiety, self-efficacy and psychological resilience significantly predict mental toughness among badminton players.
- To examine whether male and female badminton players differ in mental toughness.
- To examine whether players with different levels of competitive experience differ in mental toughness.

## Hypotheses

- H1: Competitive anxiety will have a significant negative relationship with mental toughness among badminton players.
- H2: Self-efficacy will have a significant positive relationship with mental toughness among badminton players.
- H3: Psychological resilience will have a significant positive relationship with mental toughness among badminton players.
- H4: Competitive anxiety, self-efficacy and psychological resilience will significantly predict mental toughness among badminton players.
- H5: Male and female badminton players will differ significantly in mental toughness.
- H6: Badminton players with different levels of competitive experience will differ in mental toughness.

## Operational Definitions

**Mental Toughness:** The athlete's psychological capacity to remain confident, focused, emotionally controlled and persistent when confronted with competitive pressure, setbacks and difficult performance situations.

**Competitive Anxiety:** Cognitive and emotional apprehension experienced by athletes in situations involving competition, performance evaluation and the possibility of failure.

**Self-Efficacy:** An athlete's perceived capability to successfully perform behaviours and actions necessary to meet sport-related demands.

**Psychological Resilience:** The ability to adapt positively to stressful or adverse experiences, recover following setbacks and continue functioning effectively.

**Badminton Players:** Individuals actively participating in organized competitive badminton at district, state, university, school, academy or higher levels in Uttar Pradesh.



## Review of Literature

### Mental Toughness in Sport

Mental toughness has been widely discussed as a psychological characteristic associated with effective athletic performance under pressure. Mentally tough athletes tend to demonstrate persistence and confidence while maintaining concentration when competitive conditions become difficult. Jones, Hanton and Connaughton conceptualised mental toughness as a collection of psychological characteristics that enable athletes to perform consistently despite competitive demands. Later work by Gucciardi and colleagues supported a more contextual view in which mental toughness is related to how athletes interpret and respond to demanding situations.

### Competitive Anxiety

Competitive anxiety can include cognitive worry, physiological activation and concerns about performance evaluation. While an appropriate level of arousal can sometimes facilitate performance, excessive anxiety may interfere with attention, confidence and decision-making. The Competitive State Anxiety Inventory framework has been influential in examining cognitive anxiety, somatic anxiety and self-confidence in sport.

### Self-Efficacy and Athletic Performance

Bandura's social cognitive theory proposes that self-efficacy influences behavioral choice, effort, persistence and emotional responses. Athletes with stronger efficacy beliefs may be more willing to approach demanding situations and persist after setbacks. Sport-specific self-efficacy can influence how players interpret difficult opponents, errors and pressure situations.

### Psychological Resilience

Resilience is relevant to competitive athletes because sport involves failure, injury, selection pressure, performance fluctuations and repeated evaluation. Resilient athletes may recover more effectively after adverse events. Resilience and mental toughness are related but conceptually distinct: resilience emphasizes adaptation and recovery, whereas mental toughness focuses strongly on effective functioning under competitive pressure.

### Relationship among the Variables

The proposed framework suggests that self-efficacy and resilience may strengthen mental toughness, whereas excessive competitive anxiety may undermine it. Players with strong efficacy beliefs and effective coping resources may be more capable of controlling anxiety and maintaining task-focused behavior.

## Method

### Research Design

A cross-sectional correlational research design may be employed. This design permits examination of relationships among competitive anxiety, self-efficacy, resilience and mental toughness without experimentally manipulating the variables.

### Sample

For the proposed study, a sample of 200 badminton players may be selected from different districts, sports academies, colleges, universities and competitive badminton settings in Lucknow, Uttar Pradesh. The following distribution is illustrative and must be replaced with the actual sample.

| Variable               | Category      | n   |
|------------------------|---------------|-----|
| Gender                 | Male          | 120 |
|                        | Female        | 80  |
| Age                    | 15–18 years   | 70  |
|                        | 19–22 years   | 80  |
|                        | 23–28 years   | 50  |
| Competitive experience | Up to 3 years | 65  |
|                        | 4–7 years     | 80  |



|       |                   |     |
|-------|-------------------|-----|
|       | More than 7 years | 55  |
| Total |                   | 200 |

### Sampling Technique

Purposive sampling may be employed to identify badminton players who meet the inclusion criteria. Participants may be recruited through badminton academies, educational institutions, sports clubs and district or state-level competitions.

Inclusion criteria: active badminton players; experience of organized competitive badminton; predetermined age range; voluntary participation and informed consent; ability to understand the questionnaire language.

Exclusion criteria: individuals not actively participating in badminton; inability to complete the assessment; refusal to provide consent; and substantially incomplete response protocols.

### Tools for Data Collection

The final manuscript should identify the exact editions of the instruments actually administered. A suitable battery may include a standardized sport-specific mental toughness questionnaire, a validated competitive anxiety inventory, the General Self-Efficacy Scale developed by Schwarzer and Jerusalem, and a validated resilience measure such as the Connor-Davidson Resilience Scale. The exact item numbers, response formats, reliability coefficients and scoring procedures should be reported according to the versions actually used.

### Procedure

After obtaining institutional permission and informed consent, participants may be approached individually or in small groups. The researcher should explain the purpose of the investigation and assure participants that their responses will remain confidential and will be used only for academic research. Participants may first provide demographic information and then complete the psychological measures. Standard instructions for each instrument should be followed. Completed protocols should be checked for missing responses before coding and statistical analysis.

### Results

Table 1. Descriptive Statistics of Psychological Variables

| Variable                 | N   | Mean  | SD    |
|--------------------------|-----|-------|-------|
| Competitive Anxiety      | 200 | 42.68 | 8.21  |
| Self-Efficacy            | 200 | 29.74 | 4.83  |
| Psychological Resilience | 200 | 68.52 | 9.17  |
| Mental Toughness         | 200 | 74.31 | 10.26 |

The descriptive statistics provide an overview of the psychological variables measured in a sample of 200 participants. Competitive anxiety recorded a mean score of 42.68 with a standard deviation of 8.21, indicating moderate levels of anxiety with relatively consistent responses across individuals. Self-efficacy showed a mean of 29.74 and a standard deviation of 4.83, suggesting participants generally reported a fairly strong belief in their abilities, with less variability compared to anxiety. Psychological resilience had a higher mean of 68.52 and a standard deviation of 9.17, reflecting that most individuals demonstrated strong adaptability and coping capacity, though with some variation in scores. Mental toughness emerged as the highest mean value at 74.31 with a standard deviation of 10.26, highlighting that participants overall displayed considerable psychological strength and persistence, though with slightly greater variability than resilience. Taken together, these results suggest that while competitive anxiety is present, the sample demonstrates relatively high levels of self-efficacy, resilience, and mental toughness, which are important protective factors in managing stress and performance challenges.



**Table 2. Correlations among Psychological Variables**

| <b>Variables</b>       | <b>1</b> | <b>2</b> | <b>3</b> | <b>4</b> |
|------------------------|----------|----------|----------|----------|
| 1. Competitive Anxiety | 1        |          |          |          |
| 2. Self-Efficacy       | -.31**   | 1        |          |          |
| 3. Resilience          | -.36**   | .48**    | 1        |          |
| 4. Mental Toughness    | -.42**   | .57**    | .63**    | 1        |

Note. \*\* $p < .01$ .

The correlation table highlights the relationships among four psychological variables: competitive anxiety, self-efficacy, resilience, and mental toughness. Competitive anxiety shows significant negative correlations with all three other variables, indicating that higher anxiety is associated with lower self-efficacy ( $r = -.31$ ), reduced resilience ( $r = -.36$ ), and diminished mental toughness ( $r = -.42$ ). In contrast, self-efficacy demonstrates positive and significant associations with resilience ( $r = .48$ ) and mental toughness ( $r = .57$ ), suggesting that individuals who believe in their abilities are more resilient and mentally tougher. Similarly, resilience is strongly and positively related to mental toughness ( $r = .63$ ), meaning that those who can adapt and recover from challenges tend to exhibit greater psychological strength. Overall, the pattern of correlations suggests that competitive anxiety undermines psychological resources, while self-efficacy and resilience act as reinforcing factors that contribute to higher levels of mental toughness.

#### Multiple Regression Analysis

| <b>Predictor</b>         | <b><math>\beta</math></b> | <b>t</b> | <b>p</b> |
|--------------------------|---------------------------|----------|----------|
| Competitive Anxiety      | -.21                      | -3.42    | <.01     |
| Self-Efficacy            | .32                       | 5.01     | <.001    |
| Psychological Resilience | .47                       | 7.26     | <.001    |

Illustrative model:  $R = .70$ ;  $R^2 = .49$ ; Adjusted  $R^2 = .48$ ;  $F(3,196) = 62.74$ ,  $p < .001$ .

From the above table it was found that the illustrative regression model indicates that the three psychological variables jointly explain approximately 49% of the variance in mental toughness. Resilience appears to be the strongest positive predictor, followed by self-efficacy, while competitive anxiety demonstrates a negative predictive relationship.



## Gender Differences in Mental Toughness

| Group  | N   | Mean  | SD    | t      |
|--------|-----|-------|-------|--------|
| Male   | 120 | 76.02 | 9.84  | 2.71** |
| Female | 80  | 71.75 | 10.48 |        |

Note. \*\* $p < .01$ .

The results of the analysis reveal a clear gender difference in mental toughness. The male group, with a sample size of 120, achieved a mean score of 76.02 (SD = 9.84), while the female group, consisting of 80 participants, recorded a lower mean score of 71.75 (SD = 10.48). The independent samples t-test produced a value of 2.71, which is statistically significant at the  $p < 0.01$  level. This indicates that the observed difference between males and females is unlikely to be due to chance. The relatively similar standard deviations suggest that both groups displayed comparable variability in their scores, meaning the difference is consistent across participants rather than being influenced by extreme cases. Overall, the findings suggest that males in this sample demonstrate significantly higher levels of mental toughness compared to females. This outcome points to gender as a potential factor influencing psychological resilience, and it highlights the need for further investigation into the social, cultural, or biological factors that may explain these differences.

## Discussion

The proposed study examines psychological correlates of mental toughness among badminton players in Uttar Pradesh. The illustrative findings indicate a negative relationship between competitive anxiety and mental toughness. Excessive competition-related worry may consume attentional resources and lead athletes to focus on mistakes, possible failure or evaluation, thereby interfering with concentration and confidence.

The illustrative positive relationship between self-efficacy and mental toughness is consistent with the view that athletes who believe in their capabilities may be more willing to persist when facing difficult opponents or unfavorable match situations. Stronger efficacy beliefs may also help players interpret errors as correctable events rather than evidence of inability.

The strongest illustrative association is between resilience and mental toughness. Badminton involves repeated experiences of winning, losing, mistakes, fatigue and psychological pressure. Resilient players may recover more effectively after losing a point or set and may maintain purposeful effort following setbacks.

The illustrative regression model suggests that anxiety, self-efficacy and resilience may jointly account for substantial variation in mental toughness. However, these results are simulated and require replacement with actual statistical findings before any scientific conclusion is made.

## Major Findings

- Competitive anxiety was negatively associated with mental toughness in the illustrative analysis.
- Self-efficacy was positively associated with mental toughness.
- Psychological resilience demonstrated a strong positive association with mental toughness.
- The three psychological variables jointly predicted mental toughness in the simulated regression model.



- Resilience appeared to be the strongest predictor in the illustrative model.
- A simulated gender difference was observed; this requires verification using actual data.

## Conclusion

Mental toughness is an important psychological resource for badminton players who must maintain effective performance while dealing with pressure, mistakes, fatigue and unpredictable competitive situations. The proposed research framework considers competitive anxiety, self-efficacy and psychological resilience as important psychological correlates and potential predictors of mental toughness.

The illustrative analysis suggests that higher self-efficacy and resilience may be associated with stronger mental toughness, whereas excessive competitive anxiety may be associated with reduced mental toughness. Psychological preparation should therefore complement technical and physical training. Systematic training in confidence, emotional control, resilience, concentration and coping with competitive pressure may help badminton players respond more effectively to challenging match situations.

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