Engineering Universe for Scientific Research and Management
ISSN (Online): 2319-3069
Vol. XIV Issue IV
April 2022

Insights Into Cricketers' Mental Skill Ability Across Age Groups: A Comprehensive Analysis

Sanjay Marskole[1], Dr. Minakshi Pathak[2]

Research Scholar, Sri Satya Sai University of Technology and Medical Science Sehore (M.P.)[1]
Supervisor, Sri Satya Sai University of Technology and Medical Science Sehore (M.P.)[2]

Abstract

This study presents a comprehensive exploration of cricket psychology, analyzing mental skill ability across diverse age groups, including U-17, U-19, U-23, and seniors. Mean scores, standard deviations, standard errors, and percentages offer a detailed portrait of mental skill variations, revealing the evolving nature of mental resilience throughout a cricketer's career. The study's significance lies in informing tailored training programs, enhancing mental fortitude specific to developmental stages. As cricket increasingly becomes a mental battle, the analysis contributes to academic sports psychology and holds practical implications for player development and coaching interventions. Present study featuring Scheffe's post hoc analysis, highlights a significant difference in mental skill ability between senior and U-23 Cricketers (mean difference = 9.218, Sig. = .042**). While mean differences for U-17 and U-19 groups are higher for seniors, they are not statistically significant (Sig. values of .064 and .132, respectively, > 0.05). In summary, this research unveils a notable difference in mental skill ability between senior and U-23 Cricketers, emphasizing heightened mental acuity among seniors in this context, providing valuable insights for cricket coaches and players.

Keywords: Sports, Badminton, Psychological Dynamics, Motivation, Extrinsic Factors, Anxiety.

1. Introduction

Cricket, renowned for its dynamic nature, requires more than just physical prowess – it demands a high level of mental skill ability. The psychological attributes of cricketers play a pivotal role in shaping their performance, necessitating a nuanced understanding for tailored training programs. This study is a dedicated exploration into the mental skill ability of cricketers across diverse age groups, aiming to unravel the intricate factors that influence their mental resilience on the field. Analysis provides a holistic overview of the psychological dynamics inherent in cricket, offering valuable insights into the evolving nature of mental resilience across various age categories. As we delve into the intricacies of mental skills, this study sets the stage for a deeper exploration into the psychological facets influencing cricket performance. The findings not only contribute to the academic understanding of sports psychology but also carry practical implications for coaches and players striving for excellence in the dynamic game of cricket.

Noble (1986) supported our emphasis on mental resilience by highlighting the importance of mental qualities in athletes. Corresponding to this, Shephard and Astrand's (1992) research highlighted the impact of psychological elements on performance, supporting our investigation into mental abilities in cricket. According to a research by Omosegaard (1996), the dynamic nature of both games is shown by the same strain that badminton and cricket place on the leg muscles. Our research is complemented by the examination of elite and sub-elite Malaysian badminton players (Wong et al., 2010), which offers information on the physiological and physical characteristics that distinguish different player levels.

The metrics in the present study offer a detailed insight into the variations and nuances in mental skill ability within the cricketer cohort, contributing to a richer understanding of the psychological aspects in cricket. This study not only serves as a snapshot of the current mental skill landscape in cricket but also paves the way for future research. The prospects of the study lie in uncovering more granular details of mental attributes, potentially identifying key interventions for enhancing mental resilience at different stages of a cricketer's career. The primary objective is to provide a comprehensive understanding of the nuanced interplay between age and mental skill ability, offering valuable guidance for the development of targeted training programs and strategic interventions. Through this research, we aim to bridge the gap between theoretical knowledge and practical application, contributing to the holistic development of cricketers across age groups. Identifying the mental attributes that contribute to successful cricket performances is crucial for coaches and trainers. The insights garnered from this analysis can aid in the development of targeted training programs, catering to the specific mental skill needs of

cricketers at different stages of their careers. Coaches can use these findings to optimize mental skill training interventions, fostering resilience and enhancing the overall mental fortitude of players.

2. Research Methodology

Sample Selection

A total of 500 cricket players aged over 16 voluntarily participated in this study. The participants were drawn from various first and second division cricket clubs affiliated with the Cricket Association participating in the Indian Cricket League. The inclusion of players from different regions of India added diversity to the sample, reflecting the broad spectrum of expertise in professional cricket. Additionally, data were sourced from cricket training centers and universities. The research employed a systematic approach to categorize participants based on age, participation level, total number of matches in a season, and specific activities. Each category was further sub-divided for detailed analysis, as outlined in Table 1.

Table 1. Distribution of participant players in different groups

Groups	Sub Area & Distribution of Data				
Age Groups		U-17	U-19	U-23	Senior
	Total	126	154	146	74
	%	25.2	30.8	29.2	14.8
Participation Level		State	University	District	Club
	Total	92	76	89	243
	%	18.4	15.2	17.8	48.6
Total Number of matches in a season		Below 30	30 to 60	Above 60	
	Total	246	182	72	
	%	49.2	36.4	14.4	
Particular Activity		Batting	Bowling	Wicket Keeping	
	Total	326	128	46	
	%	65.2	25.6	9.2	

Testing Tools and Variables

Survey-based methods, employing questionnaires or written tests, are commonly used to explore individuals' thoughts, attitudes, and emotions. This research utilized a standardized pen-and-paper psychometric survey, approved by the supervisor, examining various sports psychology factors.

Demographic Information and Personal Particulars

The survey covered critical details such as Name, Age, Cricket Experience, Educational Qualifications, Daily Practice Hours, Participation Level, Specific Cricket Activity, Batting Order, Bowling Style, and Matches Played.

General Psychological Information

An independent poll, guided by specialists and existing literature, comprised 13 questions using a four-point Likert scale. It aimed to gauge subjects' overall mental perspectives, focusing on psychology and cricket-related matters.

Mental Skills

The Mental Skills Survey (MSQ), developed by Bull, Albison, and Shambrook in 1996, measured various mental skills. Cricketers rated their frequency of encountering situations on a 6-point Likert scale, encompassing sub-variables like Imagery Ability, Mental Preparation, Self-Confidence, Anxiety and Worry Management, Concentration Ability, Relaxation Ability, and Motivation.

Connected Implications of MSQ Sub-Variables:

- *Imagery Ability:* Involves creating mental images, evaluated by generational, sensorial, and personal characteristics.
- *Mental Preparation:* Facilitates a focused, confident, and trusting mindset for peak performance.
- *Self-Confidence:* Signifies absolute belief in personal ability, fostering certainty.
- *Anxiety and Worry Management:* Addresses the ability to manage stress and anxious thoughts.
- *Concentration Ability:* Focuses on an undisturbed mind's ability to concentrate on tasks in both practice and competition.
- *Relaxation Ability:* Emphasizes the importance of relaxation in effectively managing stress and anxiety.
- *Motivation:* An internal process propelling individuals toward goals, observed through behavior.

This comprehensive approach in testing tools and variables ensures a thorough exploration of cricketers' psychological attributes.

Statistical Analysis

Data underwent analysis using IBM SPSS Statistical analysis package (Version 21). Statistical procedures included:

- **Descriptive Statistics:** Utilized for portraying data, this method offered insights into the sample's characteristics. Descriptive statistics provided mean performance indications of players concerning Age, Level of Participation, Matches in a season, and Specialized Role in relation to selected mental

skills. It covered participant quantity, percentage values, mean scores, and standard deviations in various subgroups.

- **Inferential Statistics:** Employed to ascertain relationships and differences among cricketers based on mental abilities and diverse categories. The following inferential analyses were conducted:
  I. **One-Way Analysis of Variance (ANOVA):** Utilized to identify statistically significant differences in mental skills across subgroups such as Age, Participation Level, Matches in a season, and Particular Activity.
  II. **Pearson Coefficient of Correlation:** Applied to explore relationships between cricketers based on their psychological imagery ability and various mental variables.

This succinct statistical approach facilitated a comprehensive understanding of the interplay between mental skills and diverse factors among cricketers.

3. Results and Discussion

Table 2 provides a descriptive analysis of the mental skill ability among cricket players across different age groups. The mean and standard deviation (SD) of mental skill ability for Under-17 (U-17), Under-19 (U-19), Under-23 (U-23), and senior players are presented as follows: 103.69±15.66, 104.61±13.09, 103.33±14.38, and 110.87±15.67, respectively. This indicates that senior players exhibit a higher mental skill ability, with a percentage level of 65.78%. The data offers insights into the variations in mental skill proficiency among cricket players of different age categories, highlighting the potential impact of age and experience on this crucial aspect of their performance.

Table 2. Descriptive Analysis of Mental Skill Ability of the Cricketers

Skill	N	Mean	St. Deviation	St. Error	Percentage (%)
Mental Skill Ability	U-17	126	103.69	15.66	1.51
	U-19	154	104.61	13.09	1.12
	U-23	146	103.33	14.38	1.31
	Senior	74	110.87	15.67	2.21
Total	500	-	-	-	-

Table 3 presents data on the levels of self-confidence of cricket players across different age groups. This table presents data on the levels of self-confidence, **Anxiety and Worry Management, Relaxation Ability and motivation** of cricket players across different age groups. The following are the inferences drawn from the data distribution:

Self-confidence
The mean values indicate the average self-confidence scores, while the standard deviation measures the variability of these scores. The standard error provides an estimate of the precision of the mean. The percentage column indicates the proportion of self-confidence exhibited by players in each age group.

Anxiety and Worry Management:
Data displays information about anxiety and worry management scores among cricket players of various age categories. The mean values represent the average scores, while the standard deviation measures the spread of these scores. The standard error reflects the precision of the mean. The percentage column illustrates the proportion of anxiety and worry management exhibited by players in each age group.

Relaxation Ability:
The relaxation ability data outlines data related to the ability of cricket players to relax, categorized by age groups. Mean values indicate the average relaxation scores, while standard deviation measures the variability. Standard error provides an estimate of the mean's precision. The percentage column signifies the proportion of relaxation ability displayed by players in each age group.

Motivation:
Data provides insights into the motivation levels of cricket players across different age groups. Mean values represent average motivation scores, and standard deviation measures the spread of these scores. Standard error estimates the precision of the mean. The percentage column indicates the proportion of motivation exhibited by players in each age group.

Table 4 depicts inferential statistical analysis of mental skill ability across age groups (U-17, U-19, U-23, and seniors) using one-way ANOVA ($\alpha = 0.05$). It summarizes variance within and between groups. "Between Groups" details include sum of squares (2147.987), degrees of freedom (3), mean square

(689.349), F ratio (4.346), and significance level (Sig.) of .034**. This signifies significance at the 0.05 level. "Within Groups" outlines variations within each age group, totaling 87322.039 with 499 degrees of freedom. Results suggest a significant difference in mental skill ability among age groups (F ratio = 4.346). Subsequent Scheffe's post hoc analysis delves deeper into specific group distinctions, offering a comprehensive understanding of mental skill variations across age categories.

Table 3.Profiling Psychological Parameters across Age Groups

Psychological variables	**Statistics**					
Self-Confidence	**Age**	**N**	**Mean**	**Std.**	**Std. Error**	**Percentage (%)**
	U-17	126	18.33	3.82	0.39	73.25
	U-19	154	18.29	3.34	0.31	73.05
	U-23	146	17.86	3.68	0.36	71.28
	Senior	74	19.18	3.37	0.49	74.75
	Total	500	-	-	-	-
Anxiety and Worry Management	U-17	126	15.84	4.77	0.49	62.44
	U-19	154	14.78	4.18	0.39	58.43
	U-23	146	14.76	4.74	0.46	58.29
	Senior	74	16.91	4.26	0.60	67.25
	Total	500	-	-	-	-
Relaxation Ability	U-17	126	17.74	3.73	0.36	70.77
	U-19	154	17.75	3.89	0.35	69.78
	U-23	146	19.09	4.19	0.59	76.34
	Senior	74	-	-	-	-
	Total	500	-	-	-	-
Motivation	U-17	126	18.75	3.28	0.33	78.99
	U-19	154	19.01	3.09	0.29	79.81
	U-23	146	19.32	2.71	0.27	79.95
	Senior	74	20.08	3.18	0.47	83.21
	Total	500	-	-	-	-

Table 4. Inferential Statistical Analysis of Mental Skill Ability of the Age Group

	Groups	Sum of Squares	df	Mean Square	F	Sig.
Mental Skill Ability	Between Groups	2147.987	3	689.349	4.346	.034**
	Within Groups	85174.052	496	219.297		
	Total	87322.039	499			

Table 5 shows Scheffe's post hoc analysis exploring mental skill ability differences among Cricketers (U-17, U-19, U-23, and seniors). It compares mean differences, standard errors, and significance levels. A significant distinction emerges between senior and U-23 groups (mean difference = 9.218, Sig. = .042**), indicating higher mental skill ability in senior players. Mean differences for U-17 and U-19 groups are higher for seniors but not statistically significant (Sig. values of .064 and .132, respectively, > 0.05). In summary, Table 5 underscores a notable difference in mental skill ability between senior and U-23 Cricketers, suggesting heightened mental acuity among seniors in this context. In summary, Table 5 highlights a significant difference in mental skill ability between senior and U-23 Cricketers, emphasizing the potentially greater mental acuity of senior players in this specific context.

Table 5. Between Groups Multiple Comparison of Mental Skill Ability of Age Group

Dependent Variable	Group	Groups	Mean Difference	Std. Error	Sig.
Mental Skill Ability	Senior	U-17	7.915	3.51202	.064
		U-19	6.833	3.42746	.132
		U-23	9.218*	3.45517	.042**

Hazra and Sudarsan (2018) compared cricket players' mental skills across age groups (N=410, West Bengal, India). Using Bull's Mental Skills Questionnaire, one-way ANOVA showed significant age-related variations. Seniors excelled in Self-Confidence, Anxiety Management, Relaxation, and Motivation, indicating age as a predictor of mental abilities. Jooste et al. (2013) studied mental skills in three cricket player levels (N=127, South Africa). ACSI-28 and Bull's Mental Skills Questionnaire revealed no significant differences, but successful participants displayed high proficiency in key areas. The findings emphasize the importance of mental skills for cricket participation and development across levels, aligning with our cricket study results.

Our study, focusing on the mental skill ability of Cricketers across various age groups, aligns with previous research in sports psychology. Noble (1986) highlighted the significance of mental attributes in athletes, supporting our emphasis on mental resilience. Similarly, Shephard and Astrand's work (1992) emphasized the role of psychological factors in performance, reinforcing our exploration of mental skills in the context of cricket. In a study by Omosegaard (1996), the strain on leg muscles during badminton resonates with our findings on the mental skills required for cricket, highlighting the dynamic nature of both sports. The analysis of elite and sub-elite Malaysian badminton players (Wong et al., 2010) complements our research, providing insights into the physical and physiological attributes that differentiate player levels. Our study's statistical methods, including one-way ANOVA and Scheffe's post hoc analysis, draw on established practices in sports psychology research (Babbie, 1992; Smith et al., 1995; Bull et al., 1996). This methodological alignment ensures the robustness and comparability of our results with existing literature.

Our focus on the sub-variables of the Mental Skills Survey (MSQ) corresponds to Bull et al. (1996) framework, reinforcing the validity of our measurement tools. In conclusion, our study builds on the foundation laid by previous researchers, contributing nuanced insights into the mental skill ability of Cricketers across different age groups. The collective body of literature in sports psychology supports the holistic understanding of mental resilience in sports, with our findings offering a valuable addition to this discourse.

4. Conclusion

In conclusion, this analysis of cricketers' mental skill ability provides a comprehensive overview of the psychological dynamics within the sport. The variations observed across age groups underscore the evolving nature of mental resilience in cricket. As we delve deeper into the intricacies of mental skills, the findings presented set the stage for a more profound exploration into the psychological facets that influence cricket performance. This study not only contributes to the academic understanding of sports psychology but also has practical implications for coaches and players striving for excellence in the game of cricket.

Reference

[1] Bull, S; Albinson, J; Shambrook, C. (1996). The Mental Game Plan. Getting Psyched for Sport. Eastbourne: Sports Dynamics
[2] Hazra, M; Biswas, S. (2018). A Study on Mental Skill Ability of Different Age Level Cricket Players. 3. 1177-1180.
[3] Jooste, J; Wyk, J.G.U.Van; Steyn, B. (2013). The relationship between mental skills and level of cricket participation. African Journal for Physical Health Education, Recreation and Dance. 19. 254-265.
[4] Noble, B.J. (1986). Physiology of Exercise and Sport. St. Louis, Missouri: Mosby College.
[5] Omosegaard, B. (1996). Physical Training for Badminton. Denmark: Malling Beck
[6] Shephard, R.J; Astrand, P.O. (1992). Endurance in Sport: The Encyclopaedia of Sports Medicine. vol II. London: Blackwell Scientific.
[7] Sport. Eastbourne: Sports Dynamics.