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Match analysis trends in limited overs professional cricket: A systematic review of technical and tactical performance

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Abstract

The rise of data-driven analytics has created opportunities to understand cricket's technical and tactical dynamics more comprehensively with additional context. The aim of this review was to provide a greater understanding of technical and tactical performance in cricket and highlight consistent trends and contradictions across studies. Following PRISMA guidelines, a systematic search was conducted across five databases - Google Scholar, Web of Science, Scopus, Sport Discus, and PubMed. Forty-seven (n = 47) studies published between 2007 and 2024 met the inclusion criteria. Methodological quality was assessed using a 13-item checklist and inter-rater reliability was verified using Cohen's K. The mean methodological quality of included studies was 81%, with 77% rated excellent. Research predominantly addressed men's cricket, with only three studies involving female players. Research trends indicated increasing integration of contextual and advanced statistical models, improved quantification of performance metrics in all the domains, and emerging attention to pressure and situational variables. This review also highlights several technical and tactical performance aspects that batters, bowlers and fielders can use to become more effective, whilst other practitioners could use them to aid recruitment decisions and inform coaching practice moving forward. Despite growing analytical sophistication, research-practice integration appears to remain limited.

Keywords

Batting, bowling, fielding, research-practice integration, wicketkeeping

Reviewer: Simon Feros (Deakin University, Australia)

Introduction

Cricket is an international team sport that is played between two teams that comprise of batters and bowlers, all of whom will be required to contribute to fielding.[1] Limited-overs cricket, comprising of One-Day Internationals [ODIs] and Twenty20 [T20] formats has evolved into a fast-paced, strategy-intensive game.[2] This evolution has brought new challenges, including optimising batting orders, refining bowling strategies, and enhancing fielding and wicketkeeping performance.[2] As these formats demand quicker adaptability and strategic precision, the importance of advanced match analysis has grown significantly.[3] Previous research has revealed that many technical[4–6] and tactical[1,7–9] factors affect the performance of cricket teams in the multi-formats and the outcomes of matches. To the best of authors knowledge, this systematic review represents the first comprehensive attempt to synthesise trends in match analysis research in limited-overs cricket, focusing specifically on the technical and tactical indicators of batting, bowling, fielding, and wicket-keeping.

Consistent with performance analysis literature in invasion sports, technical indicators in cricket are those that quantify the execution and outcome of individual skills, such as batting average, strike rate, boundary and dot-ball frequencies, bowling average, economy rate, strike rate, and fielding or wicketkeeping actions (catches, run-outs, stumpings, boundary saves). In contrast, tactical indicators

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capture how these technical actions are deployed relative to match context and team strategy, for example through contextual batting and bowling functions, pressure indices, phase-specific scoring, dot-ball rates, and match-up statistics that relate actions to game state, resources, and win probability in limited-overs cricket.[5,10] Current technical tactical match analysis trends in ODI's and T20's reflect a shift from static, aggregate statistics towards integrated, context aware models that evaluate not only how well players execute skills, but when and where those skills most influence outcomes.[5,10] This distinction is important because technical indicators alone can misrepresent performance if they ignore the difficulty or importance of the situations in which actions occur, whereas combining technical and tactical indicators supports more valid player evaluation, role definition, and decision-making for coaches, selectors, and analysts in modern limited-overs cricket.[5,9,11] For example, studies[9,11] have demonstrated how analysing player performance in high-pressure situations, such as final phase in T20 cricket, can guide training programmes and match preparation. Historically, cricket analysis relied on traditional metrics like averages and strike rates, which offered limited context.[12] Contemporary research has shifted toward data-driven approaches that explore nuanced patterns in performance.[5] For instance, the runs guard framework[4] demonstrates how optimised field placements can significantly reduce scoring opportunities for opposition batters. Similarly, clutch metrics[5] provide insights into players' performance under high-pressure scenarios, also factors like age, bowling type, and pitch conditions can influence tactical decisions during critical game moments.[7,9,13]

Data-driven insights have revolutionised how teams approach strategy formulation. Metrics like ball-by-ball scoring trends, pitch conditions, and player matchups allow coaches and analysts to devise tailored game plans.[14,15] Research on decision-making in cricket has shown that understanding contextual factors through match analysis enables teams to make informed decisions during games, such as optimising batting orders or bowler utilisation.[5] Previous studies have focused on extracting information from commentary data for multiple purposes, including detecting key events[16] quantification and evaluation of batting and bowling performances[17–22] exploring cricket analytics like introduction of new performance metrics,[12,23–25] fielding performance quantification[26–28] and extracting strength and weakness of players.[29,30] In addition, previous studies have explored various facets of cricket analytics, including factors influencing performance,[8] strategies for batting and bowling against specific opponents,[31] and contextualised approaches to batting and bowling in limited-overs cricket,[5,32] machine learning based team selection,[33] and understanding the impact of contextual factors on team performance in T20 cricket through an interpretable machine learning approach.[34] Furthermore, previous studies have collectively explored strategic decision-making and performance evaluation in cricket, covering optimal playing strategies against specific bowling types using game theory,[31] player-aware resource compensation in interrupted matches,[35] and estimating a batter shot selection in T20 cricket to guide strategic decisions related to fielder placement.[36] Research on batting strategies has introduced innovative metrics such as batting precedence scores, which allow for contextual comparisons across formats, and survival analysis, which evaluates partnerships and individual resilience.[5,37–39] In bowling, previous research has revealed trends in age-related performance,[9] optimal bowling lengths for specific batter types,[13] and new models like Critical Resource Management [CRM] that accurately measure wicket-taking ability.[40] Fielding and wicketkeeping analyses, supported by tools like the Bayesian-enhanced fairer fielding performance measure [FFPM], have redefined how defensive contributions are assessed.[27,41]

However, these studies were subject to several important limitations. Most analyses rely on retrospective scorecard or commentary data from specific competitions or countries, typically in men's cricket, which restricts the generalisability of proposed indicators across formats and women's competitions.[1,2,5,6,15,17,26,28,37,42–46] Many of the advanced metrics and modelling approaches including multi-criteria decision methods, Bayesian and copula-based models, and composite indices for batting, bowling, and fielding are mathematically complex and rarely evaluated for interpretability or practical uptake by coaches and selectors.[11,12,31,32,34,36,40,47–49] In addition, event coded studies seldom report inter-rater reliability or analyst training procedures, despite evidence from broader performance analysis research that variability in coding and analyst expertise can materially affect indicator validity.[1,4,8,10,26,28,29,34,37,39,46,49] Collectively, these shortcomings underscore the need for larger, more diverse and transparently reported datasets, as well as for validation of new indicators against practical decision-making in applied cricket environments.

Research in cricket match analysis has seen a proliferation of studies examining technical and tactical aspects as mentioned in the previous studies. Recent studies have also examined interactions between bowling and fielding outcomes.[10] However, the lack of integration across these studies leads to fragmentation, where insights are siloed, reducing their overall utility. The purpose of this systematic review can overcome this by:

- Compiling diverse research outcomes to provide a unified understanding.
- Highlighting consistent trends or contradictions across studies.

For example, Lemmer[12] emphasised the need to refine cricket metrics to account for contextual factors like game phases and player roles, which require a systematic synthesis to understand comprehensively. Taking this into

consideration, this review aimed to identify patterns and trends that may not be discernible in individual studies. This study aimed to provide insights into how batting metrics such as strike rates and scoring zones have evolved across different formats, highlight shifts in bowling strategies like the increased use of slower balls in T20 cricket[7] and emphasise the growing significance of fielding metrics such as boundary-saving efforts and direct-hit accuracy and the impact of such actions on determining match outcomes. This review aims to equip practitioners with evidence-based strategies to improve player development and thus inform coaching practice, as well as aid match preparation, inform in-game decision-making and guide player recruitment decisions.

Methods

Search strategy: databases, inclusion criteria and process of selection

A systematic review of literature was conducted according to the preferred reporting items for systematic reviews and meta-analyses [PRISMA] guidelines. The search strategy followed by Low et al.[50] was adopted in the current study. The databases of Google Scholar, Web of Science, Scopus, SPORTDiscus and PubMed core collection were searched by pairing the two keywords "cricket" and "performance" with various combinations of the following keywords: international 50 over, limited over, one day international, Twenty20, T20, Indian Premier League, franchise cricket, batting, bowling, batter, bowler, fielding, wicketkeeping and team performance. In addition, filters for 'English' and 'articles' were also applied. As the inaugural ICC T20 Cricket World Cup was held in 2007 in South Africa (after which T20 cricket became a global sensation with the launch of multiple national franchise leagues), it was decided that this review would include studies dating from 2007 and the final search was completed on April 20, 2024.

The inclusion criteria for this study comprised of publications in English, peer-reviewed articles, and studies focused on limited-overs cricket formats such as one-day internationals, international T20 matches, and franchise league cricket. Topics included batter, bowler, fielding, and wicketkeeping performance, team and player selection based on performance evaluation, the impact of player performance on match outcomes, women's cricket, factors influencing performance, and training methodologies. Exclusion criteria encompassed studies on predictive analytics [e.g., game outcome prediction, player performance ranking, and player role classification], injury prediction, game formats like test cricket and domestic leagues, physical demands [external loads], physiological demands [internal loads], biomechanics, conference proceedings, university journals, doctoral dissertations, and master's theses.

Initial records were identified by one review author [AGR] based on the keywords from the mentioned databases. Three independent reviewers [AP, SM and MJ] then separately screened citations and abstracts to identify articles potentially meeting the inclusion criteria. Studies that raised any uncertainty in exclusion were conservatively retained for subsequent full text review. Any ambiguity toward inclusion or exclusion of a specific study was raised to the attention of two other reviewers. Disagreements on final inclusion or exclusion of studies were resolved by consensus. Backward citation searching (reference list screening) was not undertaken as a formal additional search step. This decision was made to preserve methodological transparency, reproducibility, and strict adherence to the predefined search strategy and eligibility criteria.

Quality of studies

After all, included studies were finalised, the study quality of each publication was evaluated using a 13-item checklist adapted from Low et al.[50] This was assessed based on questions pertaining to: [Q1] clarity of purpose. [Q2] relevant background literature, [Q3] appropriate study design, [Q4] study sample, [Q5] sample size justification, [Q6] reliability of outcome measures, [Q7] validity of outcome measures, [Q8] detailed method description, [Q9] results reporting, [Q10] analysis methods, [Q11] described practical importance, [Q12] exclusion criteria, [Q13] appropriate conclusions drawn which includes implications for practice and acknowledgement of study limitations. These criteria were scored on a binary scale [1 = yes, 0 = no], where the option 'Not Addressed' was also available. A final quality score was then calculated for each study by summing its binary scores and dividing that by the maximum possible score the study could have achieved. This was then expressed as a percentage to reflect a measure of methodological quality. The quality scores were classified as follows: [1] low methodological quality for scores $\leq$ 50%; [2] good methodological quality for scores between 51% and 75%; and [3] excellent methodological quality for scores $>$ 75%. These methods of scoring and classification are consistent with those used in other reviews.[51,52] An independent inter-rater reliability analysis was also performed on the quality scores by calculating Cohen's Kappa value.[53,54]

Data extraction

Firstly, the total number of studies [n = 47] were divided among 4 researchers resulting in three researchers reviewing 12 studies each and one researcher reviewed the remaining11 studies. Then another researcher [AGR] reviewed over 50% of all the studies for inter-rater reliability analysis (54). Disagreements were resolved by consensus. The

following information were extracted from each included study: [1] Study title, [2] The study sample, for example, the number of participants or events analysed, [3] Domains assessed, for example format of the game [ODI or T20], batting or bowling or fielding & wicketkeeping, technical or tactical aspect, [4] key findings [5] practical implications and [6] quality score.

Results

Search results

The initial search returned 1,814 records. After the removal of duplicates of 216 records, 1,598 remained, and were subsequently screened by title and abstract, where 1,528 were further excluded. Subsequently, the full texts of the remaining 70 articles were assessed for eligibility, leading to the exclusion of an additional 23 articles. The main reason for exclusion were match analysis based on predictive analytics [n = 5], out of game format [n = 8], conference papers [n = 2], doctoral and master thesis [n = 5] and university journals [n = 3]. This resulted in an eventual total of 47 articles fully reviewed and the complete flow diagram is presented in Figure 1. A summary of all the individual studies reviewed is presented in Table 1, which provides information on the study sample, domains assessed, key findings, practical applications and final quality score.

Quality of studies

In the evaluation of methodological quality, the mean quality score of the included studies was 81%. One of the studies achieved the maximum score of 100%. Eight studies were classified with good methodological quality [quality score between 50 and 75%], while 36 studies had excellent methodological quality [quality score > 75%] and two studies obtained a low methodological score. The inter-rater reliability analysis achieved a Kappa value of 0.81, indicating very good agreement between observers. The main reasons for low methodological quality were related to item 5-justification of sample size, item 6 - outcome measures, item 8 - detailing results and item 11- detailing the practical importance of the study. The scores each study reviewed actually achieved for each item on our 13-point checklist are presented in Table 2.

Basic characteristics of included studies

The reviewed studies were published between 2007 and April 2024, with participants primarily comprising of international professional cricket players. This review analyses studies focusing on technical and tactical variables across different domains of cricket, specifically in one-day international [ODI] and Twenty20 [T20] formats. Technical aspects investigated included (but were not limited to) batting average, strike rate, bowling average, economy rate, bowling strike rate, number of boundaries, dot ball percentage, wicket-keeping proficiency and fielding metrics such as catching and throwing ability. Tactical aspects encompassed decision making, game strategies, field placements, bowling changes, batting order, match situations, power play utilisation, rotation of strike, captaincy decisions, partnerships, and death bowling strategies. The review included studies analysing both ODI and T20 formats [n = 8], ODI only [n = 18], and T20 only [n = 21]. Most studies focused on male players [n = 44], with two studies involving female players [n = 2] and another including both male and female players [n = 1].

Discussion

Batting

In all the reviewed literature on the technical and tactical aspects of batting analysis in ODI and T20 formats, researchers primarily focused on several key areas. This includes quantifying batting performance, shot selection, decision-making in game strategies and team selection.[1,8,13,19,32,58] Across the four included studies that examined batting metrics in limited overs cricket, there is a consistent trend that standard batting indicators, such as, batting average, strike rate, boundary count (fours and sixes) and highest score dominate performance explanation in both ODI and T20 formats. Shah et al.,[58] used factor analysis to examine performance domains across formats. In ODI's, batting average, strike rate, boundaries (fours and sixes) and highest score were the most influential, with batting explaining 56.8% of variance compared to 26.3% for bowling. However, bowling performance showed greater variation in ODI's than in T20's, indicating that while batting generally dominates outcomes, bowling effectiveness can be more decisive in ODI's, particularly in shifting match scenarios. This underscores the importance of all-rounders who strengthen both domains.[58]

In T20's, studies[21,48,58] consistently ranked 'strike rate' as the most critical parameter, followed by highest score, average, and boundaries. The emphasis reflects the format's demand for rapid scoring. Lemmer[12] further introduced adjusted metrics to overcome the limitations of batting averages inflated by not-out innings. Overall, ODI and T20 batting performance share common indicators such as, strike rate, average and boundary counts but their weight differs. These patterns across the studies suggest that in white ball cricket, batting performance is best understood as a combination of volume and tempo, with ODI's leaving greater scope for bowling to influence outcomes and T20's placing clear priority on scoring rate and acceleration. However, the evidence base is limited by small samples, league specific and predominantly male datasets, and a reliance on retrospective scorecards, which constrains generalisability

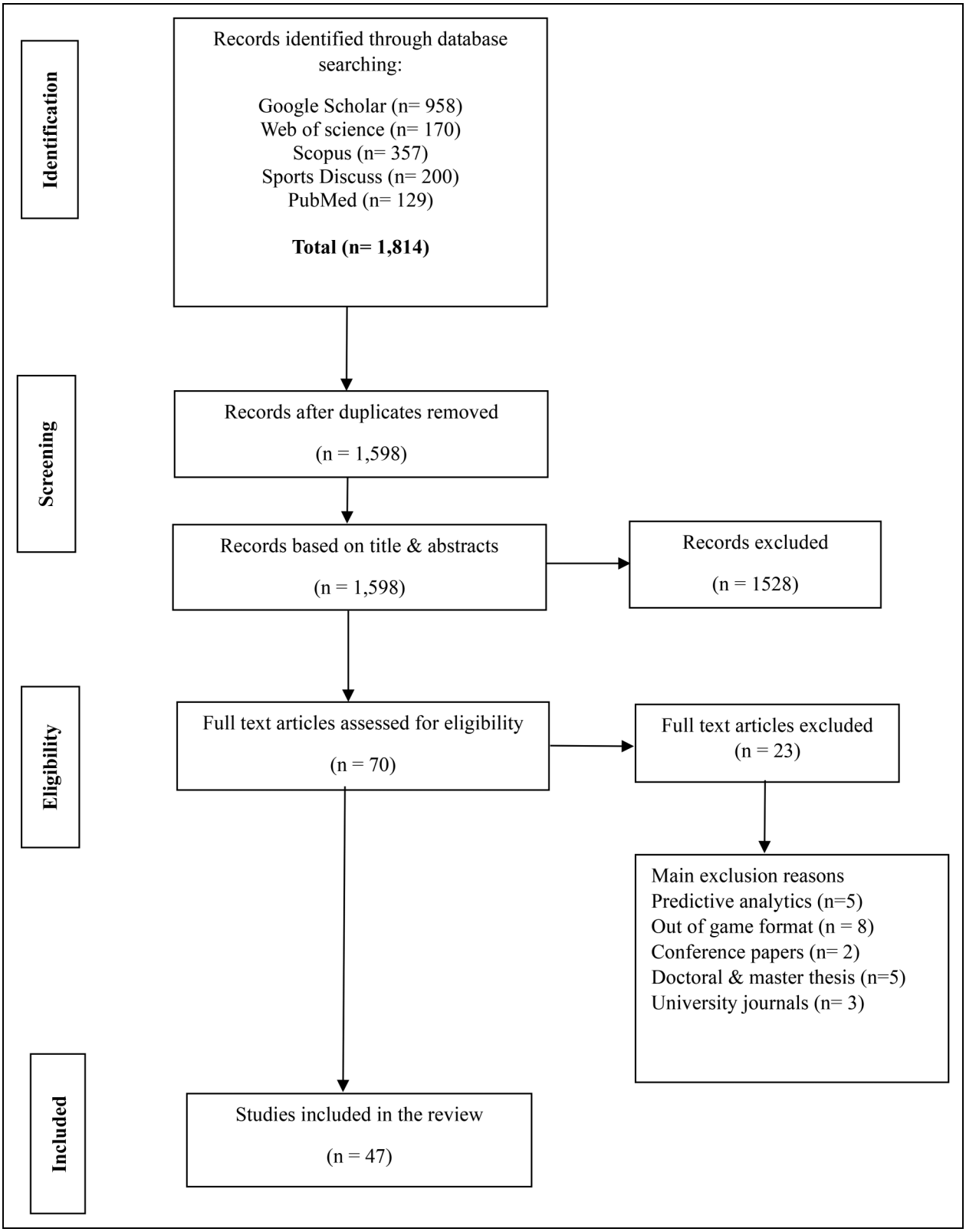

Figure 1. Preferred reporting items for systematic reviews and meta-analyses (PRISMA) flow diagram of study selection process.

Table 1. List of studies reviewed.

Study	Sample	Domains	Main findings	Practical application	Quality score (%)
(Sarkar et al., 2022)[43] Development of a Comprehensive Multi-Factor Method for Comparing Batting Performances in One-Day International Cricket	34 Batters	ODI/ Batting/ Technical	Provides a superior fit to batting scores of ODI batsmen. Introduces a measure for 'quality-runs' scored by a batsman which considers the difficulty level of opposition.	Proposed methodology could be used by team management to select the best batsmen in each situation. This form of analysis could also aid player recruitment in franchise leagues.	92.31
(Gupta, 2022)[17] Measuring Batting Performance in Women's Cricket-an In-Depth Analysis of One-Day International Matches	5428 Innings, 56 players	ODI/ Batting/ Technical	The findings reveal that incorporating Gini-based average scores and strike rate into a PCA framework significantly alters player rankings, highlighting the inconsistency of batting average as a standalone metric.	Player Selection and create framework for measuring performance.	92.31
(Kottearachchi et al., 2022)[38] An Investigation of Survival Abilities of Opening Batsmen in One-Day International Cricket	Sri Lankan Batters in CWC19 squad + 10 past openers.	ODI/ Batting/ Technical	Survival abilities of Sri Lankan openers in Cricket World Cup 2019 are low compared to the openers of other teams and past Sri Lankan openers are more reliable and consistent.	Quantification of batting performance. Also, Sri Lankan team should strengthen their opening batting.	69.23
(Lemmer, 2011)[55] The single match approach to strike rate adjustments in batting performance measures in cricket	IPL 2009 T20 dataset and ODI series between South Africa and Australia	ODI & T20/ Batting/ Technical	Consider batting conditions when measure batting performance by calculating global strike rates in different matches. The key is to compare number of runs scored with adjusted number of runs T (global match strike rate) so that it accounts for match conditions across venues.	In a short series the proposed method is a more sensitive measure of batting performance.	84.62
(Palayangoda et al., 2022)[56] Modelling joint survival probabilities of runs scored and balls faced in limited overs cricket using copulas	17 ODI partnerships	ODI & T20/ Batting/ Technical	Shows the effectiveness of copula applications applied to cricket batting and the use of bivariate distributions to rank batting performance or opening partnerships and individuals.	Useful for team managers to determine key partnerships and individuals.	92.31
(N. R. Das et al., 2024)[57] A complex network analysis approach to compare the performance of batsmen across different formats	50 Players	ODI & T20/ Batting/ Technical	Development of a new metric Batting Precedence Score which ranks batters across formats more contextually as compared to traditional cumulative batting average. This would allow comparing any batter with another regardless of format	Selection of batters based on Batting precedence scores.	76.92
(Pandey & Tolani, 2023)[19] A Bayesian perspective of middle-batting position in ODI cricket	8 batters, 55 innings	ODI/ Batting/ Technical & Tactical	Present a statistical approach using survival analysis which gives an unbiased opinion on comparison of performances for closely competing players.	Allows coaches, analyst to support selection committee for Player selection in middle order batting position.	84.62
(Zhang, 2022)[47] Measuring batting performance and strategic behaviour of batters of cricket players	Data from two countries (Australia and Sri Lanka) from 2000-2019. 1,26,504 Australian and 1,27,677 Sri Lankan observations	ODI/ Batting/ Tactical	Regression discontinuity analysis for Australia and Sri Lanka shows no strong evidence that individual incentives influence batter strategic behaviour.	The new performance index appears to be a better measure; however, without supporting data, its practical applicability remains uncertain.	46.15
(Ananda BANDULASIRI, n.d.) Factors Affecting the Result of Matches in the One Day Format of Cricket.	30 innings in the ICC Champions Trophy 2013	ODI/ Batting & Bowling/ Tactical	Batting partnerships of over 50 runs and the rank of the opposing team each had a big influence on the results of matches in the tournament analysed. The winning team were able to maintain better partnerships for most of the initial wickets.	Team Selection	69.23
(Ayub et al., 2024)[32] CAMP: A context-aware cricket players performance metric	Dataset of 1625 ODI matches between 2001 to 2019. 1002 batters and 802 bowlers.	ODI/ Batting & Bowling/ Technical & Tactical	The Camp model is discussed on its ability to factor contextual factors while rating batting and bowling performances. CAMP appears to outperform LNC. Therefore, CAMP data driven approach achieves closer agreement with MOM.	This approach can be used to weight players based on the unique context of when they perform. Moving away form traditional numbers devoid of context to a more accurate representation of performance based on game context and opposition quality, therefore valuing player contribution more effectively.	92.31

(continued)

Table 1. Continued.

Study	Sample	Domains	Main findings	Practical application	Quality score (%)
(Mehta et al., 2024)[13] Picking the length: investigating how bowling length influences batter decision-making in international men's 50-over cricket	19, 587 balls	ODI/ Batting & Bowling/ Technical & Tactical	All length zones except the half-tracker length showed statistically significant association with front-foot and back-foot strokes. Batters in ODI cricket prefer meeting the ball on the front foot in their search of scoring runs.	Bowling length-specific outcomes can be applied to inform tactical choices of bowling different areas for different batters.	92.31
(Thomson et al., 2021)[5] Contextual batting and bowling in limited-overs cricket	Second innings of 395 ODI and 625 Twenty20 matches. 169,251 balls were bowled	ODI & T20/ Batting & Bowling/ Technical & Tactical	The clutch bat and bowl statistics did not correlate strongly with overall performance measures such as batting average, strike rate, survival rate, bowl average and economy rate. However, some interesting correlations with batting strike rate and bowling economy rate.	Tactically, the clutch batting and bowling statistics may provide useful information on optimal batting and bowling orders during difficult contexts.	76.92
(Shah et al., 2019)[58] A study on performance of cricket players using factor analysis approach	175 batters and 175 bowlers from IPL 9 & ODI World cup 2015	ODI & T20/ Batting & Bowling/ Technical & Tactical	Batting capability is discovered to be more important than bowling in both IPL 9 and the World Cup 2015. Batting capability is discovered to be of more importance in IPL 9 (relative to WC 2015) and thus concluded to be more crucial in the shorter 20-over format	Team Selection and the authors suggest increasing the use of All-rounders.	84.62
(Bhattacharjee & Lemmer, 2016)[11] Quantifying the pressure on the teams batting or bowling in the second innings of limited-overs cricket matches	1 International T20 Match	ODI & T20/ Batting & Bowling/Technical & Tactical	The study developed three pressure indices to quantify team pressure in the second innings of limited-overs cricket. These indices identified the best partnerships, highlighted key turning points and assessed batting and bowling performance under pressure.	Identifying Key Partnerships, Finding the Turning Point of the game, Player Performance Analysis, Strategic Planning. Also, to study performances in power-plays. Studying the pressure curves of the opposing team can help to decide on a counter strategy.	92.31
(Jamil, Kerruish, et al., 2023)[8] Identifying which factors impact bowling and batting performances during the "death" phase of an innings in international men's 50-over cricket	3767 balls bowled exclusively during the final 10 overs of innings across 48 men's ODI matches	ODI/ Batting & Bowling/ Tactical	Bowling lengths are associated with the concession of runs during the death phase of an innings. Specifically, the yorker length results in greater than expected dot balls, whereas the full-toss and half-volley lengths are susceptible to run scoring strokes.	Coaches should work with bowlers and further develop and refine their ability to bowl the yorker length. The margins for error when attempting a yorker are very small as half-volley and full-toss lengths present scoring opportunities for opposing batters. Batting teams should look to keep 5 or more wickets in hand going into the final 10 overs.	92.31
(Jamil et al., 2022)[1] The effects of bowling lines and lengths on the spatial distribution of successful power-hitting strokes in international men's one-day and T20 cricket.	503 Ball Deliveries	ODI & T20/ Batting & Bowling/ Tactical	Bowling length, line, bowler type, and powerplays significantly influenced the distribution of 6-run aerial strokes. Bowling length had the greatest effect, with shorter balls leading to more 6's behind square, and half-volleys resulting in more off-side 6's. Balls outside off-stump saw more 6's on the off-side. Fast bowlers conceded more 6's behind square, and powerplays resulted in more 6's overall.	Bowlers can adjust lengths and lines to reduce 6-run hits, particularly by avoiding short-pitched deliveries and half-volleys, especially during powerplays. Captains can also adapt field placements and bowling strategies, knowing fast bowlers are more vulnerable to 6's behind square.	84.62
(Lemmer, 2016)[40] Wicket taking ability of bowlers.	Bowlers who had taken at least 6 wickets in the ODI World Cups 2002/3, 2006/7, 2021/11, 2014/15.	ODI /Bowling/ Technical	Compared CBR, CRK and CRM. Wicket taking ability can be judged by using CRM, whereas CBR would be better for measuring bowling performance. Review table 3 for advantages and disadvantages and best use of measures.	Compare bowling wicket taking performance in a specific series calculate K and use CRK. For wicket taking ability use the same k and CRM, CRK limited to compare series. CRM can also be used as a general measure of wicket taking ability if $K = 15.25$.	92.31
(Saikia & Bhattacharjee, 2023)[49] Visualizing bowling performance in cricket using contour plot	Top 33 ODI bowlers, bowling more than 100 overs and played in more than 30 matches at international level.	ODI /Bowling/ Technical	The scatter diagram plots bowling average and strike rate, whereas the contours represent economy rate. This allows the bowlers to be compared.	Evaluation of bowler's performance	69.23

(continued)

Table 1. Continued.

Study	Sample	Domains	Main findings	Practical application	Quality score (%)
(Indika & Wickramasinghe, 2014)[59] Bowlers' Performances in 2013 Champions Trophy	41 players, 1 Tournament.	ODI /Bowling/ Technical	Bowlers' prior economy rate and the height have influenced the performance significantly, while the handedness and the bowling style have not shown a statistical significance on their performances.	Kernel resampling technique (KRT) might be useful to deploy for small sample inferences in cricket bowling	61.54
(Mehta et al., 2022)[7] Seam or swing? Identifying the most effective type of bowling variation for fast bowlers in men's international 50-over cricket	13,176 balls bowled by international level fast bowlers	ODI /Bowling/ Technical & Tactical	Seam away deliveries are best for bowling dot balls, while seam in deliveries are most effective for taking wickets. In-swingers also result in more wickets and dot balls, but away-swingers do not show the same impact on wickets. Off-cutters and slower balls are high-risk, high-reward, conceding more runs but taking more wickets. Deliveries with no movement result in fewer wickets.	Coaches should focus on training seam movement, especially inward seam, as it is most effective for taking wickets. Captains can use "seam in" for wickets and "seam away" for dot balls. Slower balls and off-cutters are high-risk, high-reward, so bowlers should assess their use carefully.	92.31
(Jamil, Harkness, et al., 2023)[9] Investigating the impact age has on within-over and death bowling performances in international level 50-over cricket	96 bowlers, 1 full tournament	ODI /Bowling/ Technical & Tactical	Younger bowlers are significantly more likely to concede a greater number of runs on the last ball of their overs than their older counterparts. Wicket taking "death bowlers" will likely perform at their peak between the ages of 25-31, which could inform the bowling strategy of team captains.	There may be a prime age in terms of experience and fitness that helps bowlers perform better at the death. Also, experienced bowlers may show better performance in closing overs.	92.31
(MacDonald Wells et al., 2018)[28] Key match activities of different fielding positions and categories in one day international cricket	16 ODI Innings in world cup 2011	ODI/Fielding & Wicketkeeping/ Technical	Fielding activity is distributed as 20% in close positions, 51% in the inner circle, and 29% in the outer circle. Positions with the highest activity were bowler (26 contacts). Close fielders focused on stationary actions like catching, while inner circle fielders performed explosive movements like sprinting and diving. Outer circle fielders covered larger distances, requiring speed to cut off boundaries	Close Fielders: Focus on reaction time, catching ability, and throwing under pressure. Inner Circle Fielders: Emphasize agility, explosive movements, and diverse throwing techniques. Outer Circle Fielders: Prioritize speed, distance covered, jumping ability, and a strong throwing arm.	92.31
(P. Shah, 2016)[26] Measuring fielding performance in cricket	1 Match	ODI/Fielding & Wicketkeeping/ Technical	The results of this study focus on demonstrating the effectiveness of the proposed fielding performance metric by applying it to a specific cricket match. Total Fielding Points (TFP) Calculation, Average fielding points (AFP), Individual Player Fielding Scores, Illustration of Fielding Metrics.	Improving player evaluation, team selection, match strategy, and long-term performance management. By offering a standardized method to quantify fielding performance, the study equips teams and coaches with a valuable tool to enhance decision-making and improve fielding effectiveness in cricket.	53.85
(MacDonald et al., 2018)[60] Key Movements and Skills of Wicketkeepers in One-Day International Cricket	8 ODI Matches	ODI/Fielding & Wicketkeeping/ Technical	Wicketkeepers frequently perform lateral steps, followed by lateral shuffles, and running to the stumps, with key skill activities including receiving the ball, underarm throws, and taking deliveries. Missed catches were more frequent when moving left. The role demands repetitive low-intensity movements alongside explosive actions like diving and sprinting to maintain performance.	This study highlights the critical role of repetitive movements, explosive agility, and catching efficiency in wicket-keeping and provides valuable insights for coaches and strength & conditioning specialists to develop specialised training programs.	92.31
(Lemmer, 2011)[55] PERFORMANCE MEASURES FOR WICKET KEEPERS IN CRICKET	32 ODI Wicketkeepers	ODI/Fielding & Wicketkeeping/ Technical	Rankings of wicketkeepers were made by combining both dismissal rate (catches and stumpings) and batting performance.	Selectors & Coaches: An objective and easy-to-use metric to compare wicketkeepers based on performance rather than subjective analysis.	76.92
(Amin & Sharma, 2014)[48] Measuring batting parameters in cricket: A two-stage regression-OWA method	40 batters from IPL 2011.	T20/ Batting/ Technical	Based on the analysis, strike rate (S/R) is the most important factor for selecting a batsman in the Twenty20 format. In T20, maintaining a high S/R is crucial, while less emphasis is placed on preserving wickets since losing all wickets in 20 overs is unlikely.	Provides guidance on what parameters to weight when selecting a batter.	84.62

(continued)

Table 1. Continued.

Study	Sample	Domains	Main findings	Practical application	Quality score (%)
(Mondal et al., n.d.)[21] Statistical Based Multi-Criteria Decision-Making Analysis for Performance Measurement of Batsmen in Indian Premier League.	All batters, 3 IPL seasons	T20/ Batting/ Technical	In IPL session-I (2008) and session-III (2010) the Indian batsmen performed better than the others but in session-II (2009) the foreigner players performed well. Top ranked players across all seasons are presented. Proposed methodology is useful in ranking players.	Team & Player selection strategy.	38.46
(Talukdar, 2020)[37] Investigating the Role of Opening Partners While Chasing on the Outcome of Twenty20 Cricket Matches	209 International T20 matches involving 10 teams from January 2012 to June 2018.	T20/ Batting/ Tactical	The study concluded that the opening partnership is a significant factor in deciding the outcome of T20 matches during a run chase. The best opening partners reduce the pressure differential effectively, thereby increasing the chance of winning.	Effective opening pair selection.	100
(Bhattacharjee et al., 2018)[39] MEASURING PERFORMANCE OF BATTING PARTNERS IN LIMITED OVERS CRICKET	27 matches in the 2016 ICC T20 World Cup	T20/ Bating/ Tactical	The study concluded that partnerships play a significant role in reducing pressure during a match, which can significantly impact the outcome.	If the partnership scores are computed for a series of matches of a given team, then the coach can identify the partnerships that bat well under pressure. It could be helpful in determining the batting order of the team.	92.31
(Douglas & Tam, 2010)[61] Analysis of team performances at the ICC World Twenty20 Cup 2009	All matches in ICC World Cup 2009	T20/ Batting & Bowling/ Technical & Tactical	Winning teams score more runs, face fewer dot balls and score a greater number of boundaries in the powerplay phase of the game. 4's contribute more to success than 6's in the middle overs (7-14). Winning teams lose fewer wickets in the powerplay and fewer wickets in the last 6 overs. Losing teams bowl a greater number of no-balls.	Team selection and strategy. Authors suggest selection of wicket taking bowlers who can take wickets at the beginning of the innings as well as bowlers who can restrict boundaries in the middle and last 6 overs. Conversely, batters with high strike rates and capable of scoring in the "powerplay" by playing risk free cricket (4's rather than 6's) should be selected by batting teams.	76.92
(Lemmer, 2008)[12] An analysis of players' performances in the first cricket Twenty20 world cup series	46 batters, 35 bowlers	T20/ Batting & Bowling/ Technical & Tactical	Performance measures specifically designed for a limited number of matches, such as BP for batting and CBR for bowling, provide a more effective ranking of players compared to traditional metrics.	The rankings highlight the need for newer metrics, as traditional measures would have ranked players differently & inaccurately.	92.31
(Bhardwaj & Dwyer, 2022)[2] Team technical performance in elite men's and women's T20 cricket – determinants of performance within a match and across a season.	400 and 180 innings of men and women T20 cricket	T20/ Batting & Bowling/ Technical & Tactical	Findings suggest batting performance is more important than bowling in men and women's cricket, for example run rate in stage 2 of innings, followed by stage 3 and boundaries. Most important bowling indicators if how quick the first 3-5 are taken.	Provides a variety of indicators that can used by teams and analysts to set goals and design performance analysis systems.	92.31
(Kumar Sharma, 2013)[22] A factor analysis approach in performance analysis of T-20 cricket	85 batters and 85 bowlers during IPL 5	T20/ Batting & Bowling/ Technical	The variance explained by factor one (batting) is much higher than factor two (bowling) which shows clear dominance of batting capability over bowling capability.	Results can be used by team selectors and should prioritise batting capability over bowling capability.	76.92
(Davis et al., 2015)[24] Player evaluation in Twenty20 cricket	282 matches across 9 years (2005-2014). 35,356 first innings balls bowled analysed in total	T20/ Batting & Bowling/ Technical	In general, bowlers appear to contribute more to their team's performances than batsmen. Batters and bowlers are ranked according to their "expected run differential" performance and the differences between the best and worst pure batsmen, bowlers, and all-rounders are approximately 13, 21, and 13 runs, respectively	Franchise recruitment Team Selection	76.92
(Irvine & Kennedy, 2017)[6] Analysis of performance indicators that most significantly affect International Twenty20 cricket	40 international T20 matches from 2012 to 2016	T20/ Batting & Bowling/ Technical	According to this study, the most critical performance indicators for T20 success are dot balls, wickets taken, and run rate.	Team strategies, such as prioritizing wicket-taking bowlers and aggressive batting in key phases.	92.31

(continued)

Table 1. Continued.

Study	Sample	Domains	Main findings	Practical application	Quality score (%)
(Nekkanti & Bhattacharjee, 2020)[25] Novel Performance Metrics to Evaluate the Duel Between a Batsman and a Bowler	1 match, 2018 IPL Finals	T20/ Batting & Bowling/ Technical	The study concluded that Elo ratings can be effectively used to quantify and compare the performance of batsmen and bowlers in individual duels. This metric provides a novel, intuitive way to evaluate performance beyond traditional statistics.	Coaches and analyst can understand and compare player performance in duels. Augmenting viewers interest and simplified match analysis for viewers. Similar methodology can be used in fielding & wicketkeeping.	76.92
(Saikia et al., 2015)[62] Longitudinal Linear Mixed Effect Model: An Application in Analyzing Age Effects in Twenty20 Cricket	40 players over 4 seasons of Indian Premier League (IPL)	T20/ Batting & Bowling/ Technical & Tactical	Results confirm that the on-field performances of the cricketers are positively associated with the age of the players. It has been found that the experience (acquired over age) facilitates better performances in the IPL game. It is not true that the younger players perform better in Twenty20 cricket.	Team Selection	92.31
(Petersen et al., 2008)[63] Analysis of Twenty/ 20 Cricket performance during the 2008 Indian Premier League.	Included 56 of 59 games (DLS games were excluded)	T20/ Batting & Bowling/ Technical & Tactical	Winning teams hit 20% more 6 s, 14% more 4 s, score 5% less singles, 33% more 25 + partnerships, and twice as many wickets. Magnitude based differences effects sizes showed a large effect for wickets and a moderate effect for more wickets in last 6 overs, run rate, more wickets in first 6 overs, less batting dot balls, 25 + partnerships, less runs conceded in middle 8 overs.	Bowlers have more effect on the game and should include high quality wicket taking bowlers for first and last 6 overs.	76.92
(McMahon et al., n.d.)[18] The balancing act: Identifying multivariate sports performance using Pareto frontiers	891 matches	T20/ Batting & Bowling/ Tactical	The present study highlights that when there are conflicting attributes that are of equal interest, the attributes should be viewed in tandem using Pareto frontiers, or else there is a risk that the expectations of an individual to attain the highest level in both attributes univariately may be unfeasible.	Pareto frontiers can be used to identify athletes who are optimal across multiple metrics even when they are not the highest ranked in any metric. Also, it provides benchmarks when conflicting attributes are both desirable and by analysing these attributes in tandem, more realistic expectations can be set for each athlete.	69.23
(D. Das et al., 2022)[31] Optimal playing strategies of a batsman against bowling type in limited-over cricket: An application of game theory.	1 batsman IPL 2021 dataset	T20/ Batting & Bowling/ Tactical	For fast bowlers, the yorker length targeting the middle and leg stump was found to be the most effective in minimising run scoring. The optimal field placements and bowling lengths were determined to restrict a batsman's scoring, with specific attention to the long-on side for minimising run flow.	The data could help model a bowling and fielding strategy for the batter.	84.62
(Saikia et al., 2016)[64] Impact of Power Play Overs on the Outcome of Twenty20 Cricket Match	261 matches from across 4 seasons of IPL	T20/ Batting & Bowling/ Tactical	In 68.7% of cases, it was discovered that teams that batted and bowled better than their opponent in the powerplay period went on to win the match. Authors suggest that even though powerplays only account for 30% of total overs in a T20 match, they play a crucial part in determining the eventual winner.	Team strategy and team selection can be more focussed upon powerplay performance	76.92
(Mondal et al., 2011)[20] A MCDM Approach for Evaluating Bowlers Performance in IPL	All fast bowlers and spinners (inclusion criteria) that performed in seasons 2008, 2009 and 2010 of IPL	T20/ Bowling/ Technical	Indian spinners outperformed Indian fast bowlers in season 2010, whereas bowlers in both categories performed relatively equally well in the season 2009. Foreign fast bowlers and foreign spin bowlers appeared to outperform their Indian counterparts in the first season of IPL. Generally, across all 3 seasons, Indian fast bowlers and spinners performed quite well.	Franchise recruitment Bowler Selection	69.23

(continued)

Table 1. Continued.

Study	Sample	Domains	Main findings	Practical application	Quality score (%)
(Lemmer, 2014)[23] Perspectives on the use of the combined bowling rate in cricket	205 bowlers (met inclusion criteria) during the first five seasons of the IPL	T20/ Bowling/ Technical	The study concluded that incorporating the number of overs bowled into the CBR metric can provide a more accurate assessment of bowling performance, especially for bowlers who bowl only a few overs.	Evaluation of bowling performance.	92.31
(Chakraborty et al., 2023) Does spinners really matter in the powerplay of Twenty20 Cricket. Evidence from IPL	Powerplays of IPL from 2008 to 2020	T20/ Bowling/ Tactical	The spinners are better than the pacers in terms of Economy Rate. Furthermore, when a team is defending a total, spinners have shown better Bowling Average, Economy Rate, and Combined Bowling Rate	Strategic use of spinners in powerplay, Match preparation and role clarity for the players	84.62
(Saikia, 2017)[27] Quantify the fielding performance in cricket via Bayesian approach	15 cricket players from the 4th season of the IPL.	T20/ Fielding & Wicketkeeping/ Technical	In the ultimate fielding performance score, the authors combined the FFPM approach and fielding performance through the match scorecard. This provided a more accurate measure of fielding performance.	The calculations can be used in user-friendly software so that fielding performance can be provided to coaches and players.	84.62
(Saikia et al., n.d.)[41] A double weighted tool to measure the fielding performance in cricket	1 International Match	T20/ Fielding & Wicketkeeping/ Technical	Two fielding performance metrics, the Preparatory Fielding Measure (FP1) and the Fairer Fielding Measure (FP2), are proposed. These metrics account for key fielding actions, such as catches, run outs, and ground fielding, by assigning weights based on the difficulty of actions and the importance of dismissed batter.	Quantification of fielding performances of cricketers for a series of matches, whether it is Test, ODI or Twenty20 cricket. Individual fielding performance scores can then be aggregated to obtain the overall fielding performance of a team.	76.92
(Hussain et al., 2024)[4] Runs Guard Framework: Context Aware Cricket Game Strategy for Field Placement and Score Containment	1 player, 2807 balls.	T20/ Fielding & Wicketkeeping/ Tactical	The Runs Guard Framework strategy for optimising field placements leads to a significant reduction in runs scored against. This supports that the framework effectively saves runs compared with actual game outcomes.	Optimising field placements to restrict focused players' scoring opportunities. Teams can potentially achieve substantial improvements in their ability to contain runs and effectively challenge prominent batters.	69.23

Table 2. The actual scores each reviewed study achieved as part of the quality assessment.

Study	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13
(Sarkar et al., 2022)[43] Development of a Comprehensive Multi-Factor Method for Comparing Batting Performances in One-Day International Cricket.	1	1	1	1	0	1	1	1	1	1	1	1	1
(Gupta, 2022)[17] Measuring Batting Performance in Women's Cricket-an In-Depth Analysis of One-Day International Matches.	1	1	1	1	1	1	1	1	1	0	1	1	1
(Kottearachchi et al., 2022)[38] An Investigation of Survival Abilities of Opening Batsmen in One-Day International Cricket.	1	0	1	0	1	1	1	1	0	0	1	1	1
(Lemmer, 2011)[55] The single match approach to strike rate adjustments in batting performance measures in cricket.	1	1	1	0	1	1	1	1	1	1	1	0	1
(Palayangoda et al., 2022)[56] Modelling joint survival probabilities of runs scored and balls faced in limited overs cricket using copulas.	1	1	1	1	1	1	1	0	1	1	1	1	1
(N. R. Das et al., 2024)[57] A complex network analysis approach to compare the performance of batsmen across different formats.	1	1	1	1	1	0	1	1	0	1	1	0	1
(Pandey & Tolani, 2023)[19] A Bayesian perspective of middle-batting position in ODI cricket.	1	1	1	1	1	1	1	1	0	1	1	0	1
(Zhang, 2022)[47] Measuring batting performance and strategic behaviour of batters of cricket players.	1	0	0	1	0	1	1	0	1	1	0	0	0
(Ananda BANDULASIRI, n.d.)[32] Factors Affecting the Result of Matches in the One Day Format of Cricket.	0	1	1	1	1	1	1	0	1	1	0	0	1
(Ayub et al., 2024) CAMP: A context-aware cricket players performance metric.	1	1	1	1	1	1	1	0	1	1	1	1	1
(Mehta et al., 2024)[13] Picking the length: investigating how bowling length influences batter decision-making in international men's 50-over cricket.	1	1	1	1	1	1	1	1	1	1	1	0	1
(Thomson et al., 2021)[5] Contextual batting and bowling in limited-overs cricket.	1	0	1	1	0	1	1	0	1	1	1	1	1
(Shah et al., 2019)[58] A study on performance of cricket players using factor analysis approach.	1	1	1	1	0	1	1	1	1	1	1	0	1
(Bhattacharjee & Lemmer, 2016)[11] Quantifying the pressure on the teams batting or bowling in the second innings of limited-overs cricket matches.	1	1	1	1	0	1	1	1	1	1	1	1	1
(Jamil, Kerruish, et al., 2023)[8] Identifying which factors impact bowling and batting performances during the "death" phase of an innings in international men's 50-over cricket.	1	1	1	1	0	1	1	1	1	1	1	1	1
(Jamil et al., 2022)[1] The effects of bowling lines and lengths on the spatial distribution of successful power-hitting strokes in international men's one-day and T20 cricket.	1	1	1	1	0	1	1	1	1	1	1	0	1
(Lemmer, 2016)[40] Wicket taking ability of bowlers.	1	1	1	1	1	1	1	0	1	1	1	1	1
(Saikia & Bhattacharjee, 2023)[49] Visualizing bowling performance in cricket using contour plot.	1	1	1	1	1	1	1	0	0	0	1	0	1
(Indika & Wickramasinghe, 2014)[59] Bowlers' Performances in 2013 Champions Trophy.	1	1	1	1	1	0	1	1	0	1	0	0	0
(Mehta et al., 2022)[7] Seam or swing? Identifying the most effective type of bowling variation for fast bowlers in men's international 50-over cricket.	1	1	1	1	1	1	1	1	1	1	1	0	1
(Jamil, Harkness, et al., 2023)[9] Investigating the impact	1	1	1	1	0	1	1	1	1	1	1	1	1

(continued)

Table 2. Continued.

Study	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13
age has on within-over and death bowling performances in international level 50-over cricket.													
(MacDonald Wells et al., 2018)[28] Key match activities of different fielding positions and categories in one day international cricket.	1	1	1	1	1	1	1	1	1	1	1	0	1
(P. Shah, 2016)[26] Measuring fielding performance in cricket.	1	0	1	1	0	1	1	1	0	1	0	0	1
(MacDonald et al., 2018)[60] Key Movements and Skills of Wicketkeepers in One-Day International Cricket.	1	1	1	1	1	1	1	1	1	1	1	0	1
(Lemmer, 2011)[55] Performance measures for wicket keepers in cricket.	1	1	1	1	0	1	1	0	1	1	1	0	1
(Amin & Sharma, 2014)[48] Measuring batting parameters in cricket: A two-stage regression-OWA method.	1	1	1	1	1	1	1	0	1	1	1	0	1
(Mondal et al., n.d.)[21] Statistical Based Multi-Criteria Decision-Making Analysis for Performance Measurement of Batsmen in Indian Premier League.	1	1	1	0	0	0	0	1	0	0	0	0	1
(Talukdar, 2020)[37] Investigating the Role of Opening Partners While Chasing on the Outcome of Twenty20 Cricket Matches.	1	1	1	1	1	1	1	1	1	1	1	1	1
(Bhattacharjee et al., 2018)[37] Measuring performance of batting partners in limited overs cricket.	1	1	1	1	1	1	1	1	0	1	1	1	1
(Douglas & Tam, 2010)[39] Analysis of team performances at the ICC World Twenty20 Cup 2009.	1	1	1	0	0	1	1	1	1	1	1	0	1
(Lemmer, 2008)[12] An analysis of players' performances in the first cricket Twenty20 world cup series.	1	1	1	1	1	1	1	1	0	1	1	1	1
(Bhardwaj & Dwyer, 2022)[2] Team technical performance in elite men's and women's T20 cricket – determinants of performance within a match and across a season.	1	1	1	1	1	1	1	0	1	1	1	1	1
(Kumar Sharma, 2013)[22] A factor analysis approach in performance analysis of T-20 cricket.	1	0	1	1	0	1	1	1	1	1	1	0	1
(Davis et al., 2015)[24] Player evaluation in Twenty20 cricket.	1	0	1	1	0	1	1	1	1	1	0	1	1
(Irvine & Kennedy, 2017)[6] Analysis of performance indicators that most significantly affect International Twenty20 cricket.	1	1	1	1	1	1	1	1	1	1	1	0	1
(Nekkanti & Bhattacharjee, 2020)[25] Novel Performance Metrics to Evaluate the Duel Between a Batsman and a Bowler.	1	1	1	1	0	1	1	1	0	1	1	0	1
(Saikia et al., 2015)[62] Longitudinal Linear Mixed Effect Model: An Application in Analyzing Age Effects in Twenty20 Cricket.	1	1	1	1	1	1	1	1	1	1	0	1	1
(Petersen et al., 2008)[63] Analysis of Twenty/20 Cricket performance during the 2008 Indian Premier League.	1	1	1	1	0	1	1	0	1	1	1	0	1
(McMahon et al., n.d.)[18] The balancing act: Identifying multivariate sports performance using Pareto frontiers.	1	1	0	1	1	1	1	1	0	0	1	0	1
(D. Das et al., 2022)[31] Optimal playing strategies of a batsman against bowling type in limited-over cricket: An application of game theory.	1	1	1	1	0	1	1	1	1	1	1	0	1
(Saikia et al., 2016)[64] Impact of Power Play Overs on the Outcome of Twenty20 Cricket Match.	1	1	1	1	0	1	1	1	1	1	0	0	1

(continued)

Table 2. Continued.

Study	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13
(Mondal et al., 2011)[20] A MCDM Approach for Evaluating Bowlers Performance in IPL.	0	0	1	0	0	1	1	1	1	1	1	1	1
(Lemmer, 2014)[23] Perspectives on the use of the combined bowling rate in cricket.	1	1	1	1	1	1	1	1	0	1	1	1	1
(Chakraborty et al., 2023) Does spinners really matter in the powerplay of Twenty20 Cricket. Evidence from IPL.	1	1	1	1	1	1	1	1	1	0	1	0	1
(Saikia, 2017)[27] Quantify the fielding performance in cricket via Bayesian approach.	1	1	1	1	1	1	1	0	1	1	1	0	1
(Saikia et al., n.d.)[41] A double weighted tool to measure the fielding performance in cricket.	1	1	1	1	0	1	1	1	0	1	1	0	1
(Hussain et al., 2024)[4] Runs Guard Framework: Context Aware Cricket Game Strategy for Field Placement and Score Containment.	1	1	1	0	1	0	1	0	1	1	1	0	1

across competitions, eras, and genders. In addition, contextual factors such as geographical location, pitch characteristics, weather conditions and lighting in day and night matches were not systematically accounted for in these models, so the applicability of these metrics may vary across playing environments. Future work should validate these metric hierarchies in other tournaments, leagues and women's cricket, to check, whether alternative context adjusted indicators outperform current combinations and evaluate how well these models predict match outcomes or selection decisions in real-world analytic workflows.

Across both ODI and T20 cricket, researchers have sought to move beyond traditional measures such as batting average and strike rate, developing advanced statistical and context-aware models to capture batting performance more comprehensively.[5,12,25,57] Shared approaches in both formats include the integration of multiple performance variables into integrated measures, adjustment of metrics for match context and opposition quality and the use of novel algorithms to align player rankings with established benchmarks while revealing additional tactical insights. In both formats, context-aware frameworks such as the Batting Precedence Score [BPS],[57] contextual batting functions, and adjusted performance indices[5,25] incorporate situational factors like required run rate, remaining resources, and opposition strength. These methods balance the weights of strike rate and batting average while including boundary-hitting frequency, scoring milestones, and match-winning contributions. The result is a more nuanced assessment of a batter's impact under varying match conditions compared to conventional metrics. Contextual batting can be interpreted in terms of how frequently a batter increases the win probability from a given ball-by-ball game state, when visualised appropriately, these measures allow support staff to identify batters who consistently 'win' deliveries in high-urgency situations, rather than merely accumulating runs in low-pressure contexts.

Research on ODI format has placed greater emphasis on measuring consistency and adaptability over an extended innings. Statistical innovations such as Weibull distribution models[43] generate "quality runs" metrics that adjust for opposition quality, pitch type, and match conditions, outperforming exponential models in explaining variability. Composite evaluations using principal component analysis with Gini scores,[42] and network-based rankings like BPS[57] further enhance performance profiling. A distinct strength of ODI analytics is the focus on partnership dynamics and survival ability. Bivariate modelling of runs scored, and balls faced,[56] combined with Kaplan-Meier survival estimations,[38] quantifies how batters, particularly openers transition from initial batting averages (early-innings ability) to final "eye-in" averages (peak form).[19] The transition time or runs needed to reach peak performance provides a dynamic, intra-innings measure of adaptability. Additionally, pressure metrics tailored to ODI chases[11] such as pressure index 1, pressure index 2, and pressure index 3, quantify tactical pressure using required run rate, wickets in hand, and overs remaining. For coaches interpretation, the pressure indices were expressed on a single scale which suggests how difficult the 'chase' is currently or to determine which phase of the game is critical. For instance, when the PI spikes, the batting team is under more scoreboard pressure, and when it drops, the chase gets easier. These models highlight the dual challenge in ODI's of sustaining partnerships and pacing innings, equipping coaching staff with tools to optimise batting orders, identify reliable partnerships, and manage high-pressure phases effectively.

Additionally, these contextual models differ in how easily they can be interpreted and applied by coaches. Survival ability and joint survival copula models offer detailed probabilistic estimates of dismissal risk and adaptability across the balls faced, but their outputs hazard functions, survival probabilities are less intuitive for coaches and require an

analyst to translate it into simple selection or batting order rules for practitioners. In contrast, pressure indices and contextual batting functions built on required run rate, wickets in hand and phase specific scoring rates generate single, interpretable scores that coaching staff can use directly to map high pressure phases, in game decision making and communicate tactical priorities. Similarly, multifactor 'quality runs', PCA/Gini based, and network-based scores offer comprehensive rankings but depend on extensive historical datasets and specific modelling choices about opposition strength. The resulting combined indices are not straightforward for practitioners to translate into concrete coaching actions.

T20 batting research prioritises scoring efficiency and high-impact contributions in short timeframes. The Batting Performance Index adjusts strike rate to prevent overemphasis, balancing it against batting average.[12] Some studies highlight that batting accounts for greater performance variance than bowling, with strike rate and boundary hitting preferred as primary indicators.[22,24,25] Context-integrated models assess a batter's ability to exceed required run rates in critical phases, underscoring the importance of rapid scoring and situational awareness.[25] These approaches align with T20's fast-paced demands, where adaptability is less about long-term survival and more about sustaining high tempo under varying match pressures.

Batting performance in limited-overs cricket is shaped by an interplay of delivery characteristics, game phase, and contextual match variables, with tactical and strategic adjustments differing across ODI and T20 formats. In ODI and T20 formats, stroke selection is strongly influenced by bowling length and line. Deliveries pitched up to the good-length zone (approximately 6-8 m from the batter's stumps) tend to evoke front-foot play, whereas those beyond this length favour back-foot strokes.[13,65] Short-pitched and over-pitched deliveries provide scoring opportunities that batters exploit by targeting high-value zones such as behind square for short balls or the off-side arc for half-volleys.[1] While some shorter lengths can be avoided through ducking or swaying, other lengths demand structured batting responses shaped by spatial constraints and movement coordination.[13] These findings underscore the coordinative interdependence between bowler actions and batting decisions.

The powerplay phase, characterised by fielding restrictions, demands aggressive yet calculated play. Success is associated with high run rates, preservation of wickets, and effective targeting of weaker bowlers.[64] Partnerships, particularly those exceeding 50 runs, reduce dot-ball frequency, maintain run rate, and provide momentum across innings.[2,64] Boundary frequency is a consistent predictor of winning outcomes in both formats, with successful teams recording substantially more sixes and fours than their opponents.[58] Across phases, retaining wickets for the death overs enables acceleration through boundary hitting and innovative shot-making.[8,64] Across T20 powerplays, teams that achieve a higher score than their opponents in this phase subsequently win in approximately two thirds of matches, reinforcing the powerplay as a critical determinant of match outcome rather than a descriptive scoring segment. Consistent with this, analyses of elite men's and women's T20 competitions indicate that successful teams in these phases combine elevated scoring rates with reduced dot ball frequency and partnerships exceeding 50 runs, contributing to greater innings stability and sustained momentum.

In ODI's, tactical emphasis is placed on developing control against specific bowling lengths, adapting stroke selection to bowler type, and preserving resources for the final overs. Retaining five or more wickets in hand during the last ten overs significantly enhances scoring potential.[8] ODI batting strategies thus integrate delivery-specific shot adaptation with resource management across the 50-over structure.[1,13]

T20 cricket, by contrast, demands more dynamic, phase-specific strategies. Batting order adjustments are used to maximise the impact of high-strike-rate players in powerplay and death overs.[12] Shot selection is often specialised such as employing "ramp" or "dilscoop" shots against fast bowlers or targeting optimal zones against spin.[31] Phase-specific run rates are critical, with powerplay [1-6 overs] and death overs [15–20] strongly influencing match outcomes in men's cricket,[6] while middle overs [7–16] hold greater importance followed by final phase in women's cricket.[2] Successful T20 teams not only score more boundaries but also produce frequent 25 + run partnerships,[64] and strong opening partnerships increase win probability more than threefold.[37,39] Player age can also be a determinant, with senior players exhibiting greater consistency and skill execution.[62] Collectively, these findings highlight that while ODI batting strategies emphasise structured shot selection and long-term resource management, T20 batting requires rapid tactical adjustments, higher risk acceptance, and targeted exploitation of match phases to maintain superior strike rates and scoring efficiency.

The evidence supports a distinction between formats in which ODI batting strategy is dominated by cumulative resource management and delivery specific adjustment, whereas T20 batting strategy relies on short, high leverage phases that reward aggressive role specialisation, higher risk tolerance, and dynamic manipulation of batting order. These findings have several practical implications for coaching in limited overs cricket. For ODI's, coaches should prioritise batting practice that links length specific decision making and bowler type plans with explicit end overs scenarios in which at least five wickets remain, using phase-based reports (e.g., runs and boundaries per over with wickets in hand) to monitor whether lineups consistently preserve resources into the final 10 overs and adjust roles or batting order accordingly. For T20, coaching staff should

concentrate high strike rate batters into powerplay and death overs, train format specific shots (e.g., ramps, scoops, zone-based options), and track phase specific indicators such as powerplay and death over boundary rates, 25 + run partnerships, opening stand contributions, and age-related consistency when making selection and role decisions. However, these findings arise from predominantly men's international competitions, and major franchise competitions and is largely observational, with incomplete control for contextual factors.

Additionally, Ayub et al.[32] and Pandey et al.[19] applied mathematical models to support player selection by introducing metrics such as e-folding time; the runs needed for a batter to transition from initial to peak ability. Players with shorter transition times and higher peak ability were deemed more effective under dynamic conditions. Performance was also contextualised by comparing actual versus expected runs across overs and opposition strength. These approaches provide a quantifiable basis to complement traditional selection, enabling data-driven optimisation of batting line-ups.

Bowling

Both bowling and batting statistics are rich in the game of cricket, but most studies included focused on batting statistics.[59] These studies[2,22,26] highlight the dominance of batting over bowling in determining match outcomes in T20 cricket. This is supported by the variance explained in the factor analysis, with batting contributing 48.51% and bowling contributing 20.23% to the total variance.[22] Therefore, it is imperative to address this disparity by recommending strategies aimed at enhancing bowling performance and its contribution to match outcomes. Traditional bowling performance measures are bowling average, economy rate and strike rate.[66] Bairam et al.[66] referred to strike rate 'attacking bowling' and economy rate as 'defensive bowling'. According to Kimber[67] the average has traditionally been used to compare bowlers, but economy rate and strike rate have recently increased in popularity. Each measure is important, but some authors use combinations of these measures. The reviewed literature analysed on technical and tactical analysis of bowling prominently focused on bowling performance measurements,[58,59,68] bowling effectiveness[13] such as variations and outcomes, and decision making on bowler selection according to various phases of the innings.

Studies have identified both shared and format-specific indicators of bowling performance. In ODIs, economy rate, bowling average, and strike rate remain central measures[49,58,59] with greater variability in bowling performance than in T20's, making it a decisive factor in shaping match outcomes.[58] Contextual factors such as prior economy rate and bowler height with taller bowlers generating bounce that challenged batters[59] also significantly influence ODI performance. By contrast, T20 bowling performance places greater emphasis on restricting runs, with economy rate and dot ball percentage emerging as the most influential parameters.[6,20,24,62] Although bowling average and strike rate contribute to wicket-taking efficiency, fast bowlers with higher economy rates were penalised even when effective at taking wickets[22,62] highlighting the balance between control and aggression.

Beyond traditional metrics, Lemmer[40] introduced advanced measures of wicket-taking ability, namely conditional ranking with factor k, CRK - a suggested improved measure of wicket taking performance and its overs-adjusted version, CRM - a measure of wicket taking ability. CRK integrates wickets taken and bowling average into a single continuous scale, improving upon conventional methods that assess only wicket counts. CRM further incorporates overs bowled, providing a more logical evaluation by capturing both attacking [strike rate] and defensive [economy rate] aspects of bowling. Unlike traditional metrics that assess performance in isolation, CRM offers a more comprehensive representation of a bowler's overall effectiveness. However, the calculation of CRM is fairly complex, which could perhaps limit its use as a globally utilised measure, especially at lower levels of cricket (for example, county or recreational level).

Lemmer[12] proposed the combined bowling rate [CBR] to evaluate bowling performance irrespective of overs bowled, later refining it into the adjusted combined bowling rate [CBRA] by accounting for overs delivered.[23] Beyond these measures, situational metrics such as pressure indices and "*clutch bowling*"[5,11] assess performance under match conditions, incorporating factors like required run rate, wickets lost and available resources to quantify how bowlers respond to contextual demands. These indices demonstrate that effectiveness under pressure can diverge significantly from traditional measures such as average and strike rate, offering a more context-sensitive evaluation of T20 bowling performance and highlighting that bowlers with similar aggregate statistics may differ substantially in high pressure impact.

Across limited overs formats, bowling effectiveness emerges as a combination of lateral ball movement and phase specific tactical deployment rather than line and length in isolation.[1,7,13] In ODI's, experimental work on decision making shows that good length deliveries (approximately 6–8 m) combined with late swing or seam movement create the greatest batter indecision, whereas fuller lengths invite committed attacking strokes and shorter lengths prompt more binary front or back foot responses.[13] Seam variation analyses further indicate that seam movement is generally more effective than swing for both producing dot balls and taking wickets, seam away deliveries yield the highest dot ball rates, seam in deliveries is associated with the highest wicket probabilities, and balls with no lateral movement show the lowest dismissal rates.[7] In addition, off-cutters and slower balls result in fewer dot

balls but more wickets than expected, implying a deliberate risk reward trade off, that bowlers must manage in line with match context.[7] Supporting power hitting studies demonstrate that short pitched and back of length balls are particularly vulnerable to six hitting in ODI's and T20's, particularly when combined with width outside off stump, as batters can then more easily leverage or negate lateral movement, consequently fast bowlers must vary length and movement deliberately to avoid becoming predictable scoring options.[1,13]

Phase based models showed that these technical effects are embedded in distinct tactical demands across the innings. In powerplays, where fielding restrictions enlarge scoring zones, contextual analyses and performance models show that bowlers who can still attack the stumps with yorkers, hit a challenging good length that allows seam or swing, or use spinners to disrupt timing achieve lower economy rates and generate more dot balls despite elevated boundary risk.[1,5,64,68] In the middle overs, bowling teams often use more defensive or control-oriented bowlers to limit scoring while the batting side focuses on preserving wickets for a late innings acceleration. In the death overs, yorkers and slower balls become the primary tactics for restricting runs while still creating wicket taking opportunities against batters who are forced to attack. Full tosses and half volleys in this phase are consistently punished.[5,8,64] Evidence from T20 competitions further suggests that spinners can maintain lower economy rates than pacers even in powerplays, exploiting batter aggression and field settings to induce mistimed strokes, and that consistently taking wickets and delivering dot balls in these early and late phases amplifies batting pressure and increases win probability.[68] Collectively, these findings imply that coaches should design bowling plans and training not only around optimal line and length, but also around exploiting lateral movement to increase perceptual and temporal uncertainty for batters, and around clearly defined strategies for powerplay, middle, and death overs.

Age-based differences in ODI's showed younger bowlers [aged between 18-24] struggled with consistency under pressure, bowlers aged 25-31 excelled in wicket-taking, and seniors [32+] were most effective in run restriction[9] whereas, in T20's senior spinners and swing bowlers performed with greater consistency, while younger pacers displayed variability.[62] Bhattacharjee et al.[11] and Thomson et al.[5] developed methods that assess the pressure on the bowlers during the second innings of an ODI. The analysis included variables such as run rate**,** balls left and remaining wickets. Their findings revealed that bowlers' effectiveness is measured by their ability to increase pressure on the batting team via dot balls, restricting runs, or taking crucial wickets.[11] By leveraging data on bowlers' success against specific batters and varying match situations, the captain and coaches can devise strategic plans, such as selecting optimal bowlers for particular overs, optimising bowling orders during high-stakes scenario like power play or crucial match situation, and adjusting field placements. This informed approach aids real-time decision-making, enhances team selection by aligning bowlers to game scenarios, and allows coaches to offer targeted feedback for skill development.

From the perspective of winning teams' tactics, avoiding no-balls emerged as a distinguishing factor, with losing teams more frequently conceding extra runs through no-balls and subsequent free hits.[69] This highlights the importance of discipline in bowling execution, as even small lapses can significantly shift momentum. Future research should extend to women's cricket, examining tactical strategies, player development, and situational influences to better understand performance dynamics and support the game's growth.

Fielding & wicketkeeping

Fielding in cricket is the on-field action of players related to collecting the ball after it was struck by the batter.[41] A fielder always tries to limit the number of runs that the batter can score and tries to get the batter out by catching the ball or by executing a run out. Great feats of batting and bowling usually gain the most praise, but good fielding can also make a crucial contribution to a team's success.[69] Unlike Test cricket, saving runs is almost as important as scoring runs in ODI and Twenty20 cricket. Fielders must dive, make sliding stops and throw the ball with sufficient power to travel up to approximately 60-80 metres back to a team mate. If players excel in the field, they can help their team to win the match.[60]

Traditionally, only two factors have been considered as fielding performance indicators, number of catches taken and run-outs accomplished due to the availability of only these two factors in the scorecard of a match.[27] Even in considering catches and run outs, other factors such as the difficulty level and the accuracy of such actions need to be considered.[27] Findings from reviewed studies presented key activities of different fielding positions, movement and skill demands of wicket keeping, and quantification of fielding and wicket keeping performances. The reviewed studies analysed a range of indicators in fielding performance in both ODI and T20 formats highlighting common parameters such as catches, run-outs, boundary prevention, throwing accuracy, and overall fielding efficiency.[2,27,28,62] Across formats, catching emerged as a pivotal determinant of fielding success, with ODI research reporting high catching efficiency rates, while T20 analyses emphasised consistency in catches. Research on the T20 format also highlighted the direct-hit run-outs as a key contributor to winning outcomes. Both formats recognised the importance of dot balls created through effective field placements,

which applied pressure on the batting side and restricted scoring opportunities.[2,41,62]

Contextualised measures are essential because seemingly identical fielding actions can carry very different tactical value depending on when and where they occur in the game. Metrics such as total fielding points [TFP], average fielding points [AFP], fairer fielding performance measure (FFPM) and combined wicket keeping measures in ODI's and T20's already move in this direction by weighting actions according to their contribution to outcomes, while also highlighting how strongly fielding value is shaped by the over, fielding position, and broader match situation in which those actions occur.[26,27,60] For coaches and analysts, this underlines the need to interpret fielding metrics through the lens of ball-by-ball context including fielding position, phase of the innings and match state. Such contextualisation ensures that a stop in the inner ring during a high-pressure phase of the innings is not evaluated equivalently to an identical stop in a low-pressure passage of play, and that fielders are assessed according to their capacity to influence key match situations rather than on aggregate event counts alone.

Additionally, stumpings constitute a small proportion of total wicketkeeping actions, they represent high leverage dismissals that rely on anticipatory skills and rapid glovework against spin, suggesting that future performance metrics for wicketkeepers should explicitly weight stumping opportunities and outcomes, rather than subsuming them within generic dismissal counts.[60] Moreover, positional and contextual demands featured prominently in both formats. ODI analyses distinguished between close, inner-circle, and outer-circle fielding roles, linking positional demands to movement patterns such as lateral steps, dives, and sprints,[28] while T20 research emphasised contextual adaptability, particularly under powerplay restrictions and high-pressure phases where agile fielding significantly reduced scoring rates.[2,4,62]

In ODI's, fielding activity was shown to be distributed across distinct positional zones: 20% in close positions, 51% in the inner circle, and 29% in the outer circle.[28] Close fielders were primarily engaged in stationary actions such as catching, while inner-circle fielders relied on explosive movements like sprinting and diving, and outer-circle fielders covered greater distances to prevent boundaries. Wicketkeepers exhibited highly repetitive movement demands, combining low intensity sustained activity with explosive actions such as dives and sprints.[60] Studies also emphasised the importance of lateral movement, which accounted for 75% of wicketkeeping patterns, and highlighted slightly higher missed-catch rates when moving left.

In T20's, research focused on the impact of contextual constraints and high-pressure phases on fielding performance. The runs guard framework[4] demonstrated how strategic field placements could reduce opposition scoring by up to 33%, particularly during the powerplay and death overs when scoring pressure is heightened. Younger players were found to contribute disproportionately through agility and quickness, excelling in saving boundaries and executing run-outs, while older players leveraged experience in positioning and tactical decision-making to partially offset reduced athleticism.[2] Furthermore, fielding performance analysis in T20's was heavily reliant on ball-by-ball commentary data, which provided insights into player actions, but also introduced limitations in capturing nuanced positional adjustments.[4,27] Compared to ODI's, fielding in T20's was assessed as less influential than batting and bowling, though still critical in generating pressure via dot balls and direct dismissals.[62]

Practical relevance

This review has presented multiple key performance areas that should be a primary focus for professional coaches:

Batting:

- In ODI's pick and train batters for a blend of average, strike rate, boundary options, partnership building, with clear plans for preserving wickets into the last 10 overs.whereas in T20's select and role define batters primarily on strike rate and boundary frequency, with acceptance of higher risk and shorter innings if they change phases.
- In collaboration with performance analysts, teams should prioritise contextual metrics that quantify how frequently a batter improves the team's win probability or exceeds the required run rate within specific innings phases, rather than relying solely on aggregate run totals.
  - Monitor partnership metrics [length, dot-ball %, boundary rate] and train pairs to manage different phases together, especially powerplay and middle overs in T20's and first 30-40 overs in ODI's.
  - In ODI's, batting practice should integrate length-specific shot training [for example, shots against good-length, short, and over-pitched deliveries] within simulated 40–50 over scenarios that preserve at least five wickets into the final phase, using phase-based reports [runs and boundaries per over with wickets in hand] to refine batting roles and order.
  - T20 batting practice should be structured around powerplay and death-over scenarios, with targeted rehearsal of ramps, scoops, and zone-based scoring options, and with high strike-rate batters specifically prepared and scheduled to occupy these overs in match planning and selection.

Bowling:

- In ODI's evaluations should place greater emphasis on maintaining a low average alongside acceptable

economy over longer spells, and T20 evaluations weighting economy rate and dot-ball percentage more heavily, given that high economy wicket-takers can still reduce team winning chances in short formats.
- Advanced bowling indices such as CRK/CRM and CBR/CBRA may be applied internally by performance staff to rank and role-match bowlers along attacking [wicket-taking] versus defensive [run-controlling] dimensions, while communicating simplified key performance indicators to players, such as target dot-ball percentages, acceptable boundary rates and expected wickets per phase.
- Coaches should design phase-specific bowling plans in limited-overs cricket, use attacking good length swing/seam and, where appropriate, spin in the powerplay to create dot-ball clusters and wicket opportunities despite elevated boundary risk.
- Train seamers to produce consistent seam movement [especially seam-in for wickets and seam-away for dots] and to use cutters/slower balls as deliberate risk–reward options, not random variations.
- Recognise age related role profiles within the bowling unit, younger pace bowlers may require greater support to develop consistency and cope with pressure, bowlers in their mid-twenties to early thirties are typically best suited to primary wicket-taking roles, and older bowlers can be prioritised for run-containment and control-oriented tasks.

Fielding & wicketkeeping

- Use contextual fielding metrics such as TFP, AFP, and FFPM that weight actions by match situation, over, and fielding position rather than treating all catches and stops as equivalent and ensure post-match reviews distinguish high-leverage interventions (for example, inner-ring saves in high-pressure overs) from routine actions so that players are rewarded for influencing key moments.
- For inner-circle fielders, prioritise the development of acceleration, rapid changes of direction, and diving skills required to cover short distances explosively and prevent singles and boundaries. In contrast, outer-ring fielders should be selected and conditioned for high sprint speed over longer distances and boundary prevention techniques.
- Place specific emphasis on direct hit run-outs and boundary saving interventions in T20 cricket, particularly during powerplay and death overs, where each successful stop or dismissal can substantially alter expected runs and win probability.
- Design conditioning programs for wicket-keepers that support high volumes of low-intensity, repetitive movements interspersed with explosive lateral dives and sprints and emphasise technical practice of lateral movement patterns and clean collections when standing up to the stumps.
- Monitor and train stumping opportunities for wicket-keepers (particularly moving to their left) and assess conversion rates as a distinct performance area, using spin-bowling scenarios that emphasise anticipation, footwork, and rapid glovework when standing up to the stumps.

Future research and limitations

Future research should incorporate swing quantification, ball tracking, batter skill level, bowling partnerships, and contextual influences such as regional conditions, all of which would provide more comprehensive insights into bowling effectiveness. Building on existing ball-tracking and contextual modelling work in limited overs cricket, this could involve integrating Hawkeye style tracking with performance databases to examine how different swing and seam profiles interact with batter quality and match phase in shaping dismissal modes and scoring patterns.[1,5,7,8,49,59] Fielding and wicketkeeping have been explored to a much lesser extent, with minimal research on their technical and tactical aspects. Expanding studies to examine larger samples would improve generalisability and allow for deeper evaluation of how pressure, different bowling types, and environmental factors such as pitch and weather influence wicketkeeping movement and skill execution ideally through multi-camera or sensor-based tracking of footwork, stance, and reaction time linked to dismissal, byes conceded, and fielding outcome data.[28,60,70]

Beyond player-specific analyses, situational variables including venue characteristics, stadium attendance, and match timing warrant greater investigation given their potential to affect outcomes. To date, only one study examined pre-match toss, batting sequence, opposition origin, and match period as independent influences on team performance.[44] Future work should extend this approach using multi-season league datasets and multilevel or time-series models to quantify how venue [ground size, altitude], scheduling [day-night vs day], and crowd density interact with tactical decisions and key performance indicators.[4,5,11,34,44] Furthermore, as women's cricket continues to grow rapidly, there is a pressing need to investigate technical and tactical performances in women's cricket and any potential gender differences in performance. Addressing these gaps across batting, bowling, and fielding would strengthen the evidence base for cricket coaching and strategy, enabling more informed, context-sensitive decision-making. In practice, this may require developing gender -specific performance models and benchmarks that compare key indicators [for example, pace distributions, boundary rates, fielding event frequencies] between men's

and women's competitions to identify where distinct tactical principles or selection criteria are necessary.[2,17,42,45]

Another limitation is the very small representation of women's cricket within the available evidence base, with only two included studies focusing specifically on female players out of 47 total articles. As a result, the performance indicators and tactical inferences summarised here should be interpreted primarily as characterising men's or mixed-sex elite cricket and their applicability to women's formats remains uncertain. Given documented gender -specific differences in physical characteristics, match demands, and skill execution in cricket, dedicated work is needed to determine which of the present findings generalise to women's cricket and where distinct performance profiles and tactical priorities emerge.

In T20 cricket, future research should refine and expand performance evaluation metrics to capture player contributions more comprehensively. Existing studies have introduced methods for assessing batting, but greater robustness is required by analysing larger datasets across multiple tournaments and contexts. Many investigations relied mainly on first-innings data, limiting their generalisability across scenarios. A more holistic evaluation of batting should incorporate variables such as consistency, pressure performance, and partnerships (bowling and batting), while also considering situational influences like home ground advantage, pitch conditions, crowd support, opposition bowling quality, player fatigue, momentum shifts and team dynamics. These contextual elements, often overlooked in conventional analyses, play a pivotal role in determining batting outcomes. This could include longitudinal or mixed-effects models that integrate ball-by-ball contextual data with player-level covariates, or decision-making and optimisation approaches that weight contributions under different pressure states rather than relying solely on aggregate averages.

Bowling performance, particularly the balance between spin and pace, requires deeper exploration. While limited research addressed tactical and technical aspects of spin, detailed categorization of bowling types such as off-spin, leg-spin, cutters, and variations of fast bowling such as swing, seam, and wobble seam remains underdeveloped. Future work should assess how these deliveries perform in varied match contexts, as this knowledge could strengthen tactical planning and player development - for example, by profiling dismissal modes, boundary rates, and dot-ball patterns for each variation across phases, formats, and batter types to inform role specific training and match up strategies. Fielding, and especially wicketkeeping, represents another underexplored area. Despite its decisive role in outcomes, little attention has been paid to evaluating aspects such as reaction times, standing up to spinners, and stumping efficiency. Research integrating these parameters would provide a more comprehensive framework for assessing wicketkeeper performance in T20's. Moreover, the Hundred format, with its 100-ball innings and tactical innovations such as five and ten-ball overs, presents novel challenges. To date, only one study has examined batting demands in women's hundred competitions,[45] highlighting a major gap. Analysing performance requirements across batting, bowling, and fielding within this format using ball-by-ball datasets and positional tracking where available would not only advance understanding of T20 cricket but also benefit coaching and strategy across limited-overs formats.

A further consideration concerns the role of analyst expertise and human factors in generating performance data. Research in performance analysis and observational methods shows that variability in coding frameworks, differences in domain knowledge, and limited attention under high cognitive load can introduce interpretation bias and reduce inter-rater reliability, thereby influencing the metrics reported to coaches and researchers.[51,71,72] In the present body of cricket work reviewed, reliability procedures were inconsistently reported, and little attention was given to how analysts were trained or how coding schemes were standardised, which constrains confidence in the comparability of indicators across studies. Future cricket analyses should explicitly report inter-rater reliability, invest in analyst training, and, where possible, combine automated tracking with expert review to mitigate subjective bias while preserving tactical nuance.

Conclusion

In summary, this review has highlighted several technical and tactical performance aspects that batters, bowlers and fielders can use to become more effective, whilst other practitioners could use them to aid recruitment decisions and inform coaching practice moving forward. In T20 cricket, batting strike rates appear to be the most crucial factor that influences results, whereas bowling effectiveness gains greater importance in the longer 50-over format. Both formats share common parameters (strike rate, average, boundary count etc), but their weighting differs. 50-over cricket teams rely heavily on good batting while leaving more scope for bowling to influence outcomes, whereas T20 teams place clear primacy on batting strike rate and run scoring acceleration. The quantification of batting, bowling, fielding and wicketkeeping performance parameters in cricket has evolved significantly over time, transitioning from traditional metrics to more sophisticated, data-driven methodologies. The studies reviewed highlight a clear trend towards incorporating advanced statistical models, contextual factors, and computational techniques to better evaluate a player's performance.

Moving forward, teams should focus on assessing batting partnership metrics such as duration, dot-ball % and boundary rates and set appropriate thresholds for them according to the format. Greater consideration should also

be awarded to desired batting styles within specific match stages. More contextualised bowling metrics could also be more frequently used to conduct performance assessments, for example, target dot-ball percentages, acceptable boundary rates and expected wickets per phase for each bowler. Special consideration should be awarded to field placings with inner-circle fielders, being more able to perform explosive actions such as rapid acceleration, fast changes of direction, and diving skills to aid the prevention of singles and boundaries. In contrast, outer ring fielders should be selected and conditioned for high sprint speed over longer distances and boundary prevention techniques. In addition, the importance of the run-out and stumpings and their significant impact on win probability should not be under-estimated.

In general there has been much more research on batting and bowling relative to fielding, which itself has been researched more than wicketkeeping. This review has highlighted the lack of attention awarded to professional women's cricket or the relatively new format of "The Hundred" which could both be explored in future research to contribute to more robust, evidence-based decision-making in cricket coaching and strategy development. This review has also highlighted the lack of ball-tracking data or data on bowling speeds and degrees of swing/spin in cricket performance analysis. Future research could also expand on themes previously investigated whilst incorporating this additional vital information. Additionally, situational and contextual factors including pitch conditions, venue characteristics, weather, and crowd influence, which have been known to influence player and match performances in other team sports (i.e., soccer) appear to have been overlooked in cricket performance analysis and should be systematically studied moving forward to understand their impact on player performance.

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