



## PERFORMANCE CONTRIBUTION ANALYSIS OF RAIDERS, DEFENDERS, AND ALL-ROUNDERS IN ELITE KABADDI MATCHES

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### Abstract

Kabaddi performance outcomes are the result of coordinated contributions from raiders, defenders, and all-rounders, each fulfilling distinct tactical and physical roles. Despite increasing professionalization, limited scientific attention has been given to quantifying the relative performance contribution of these playing positions beyond basic scoring statistics. This study analyzes the proportional contribution of raiders, defenders, and all-rounders to match outcomes in elite Kabaddi using simulated match-performance data grounded in professional league patterns. Performance contribution is examined across offensive scoring, defensive success, and overall match impact. Positional roles are contextualized within tactical structure, workload exposure, and decision-making responsibility. Results are presented using pie-chart visualizations to clearly illustrate proportional contribution. The findings demonstrate that while raiders dominate scoring output, defenders contribute substantially to match control, and all-rounders play a critical stabilizing role. The study provides a holistic framework for evaluating performance contribution in Kabaddi and supports evidence-based player evaluation, team selection, and tactical planning.

### Keywords

Kabaddi performance analysis; positional contribution; raiders; defenders; all-rounders; match impact; tactical roles; team performance.

### 1. Introduction

Kabaddi is a strategically complex team sport in which match outcomes are shaped not by individual brilliance alone, but by the collective contribution of players operating in specialized roles. Raiders, defenders, and all-rounders perform distinct yet interdependent functions that together determine offensive productivity, defensive stability, and overall tactical balance. While popular discourse often emphasizes raiding points as the primary indicator of performance, such a narrow perspective fails to capture the multifaceted nature of contribution in Kabaddi.

In professional Kabaddi leagues, match success is influenced by a combination of scoring efficiency, defensive effectiveness, error minimization, and situational decision-making.

Raiders are tasked with generating points through successful raids, bonus-line exploitation, and not-outs under pressure. Defenders are responsible for neutralizing opposition raids through tackles, coordinated formations, and strategic containment. All-rounders bridge these roles by contributing in both offensive and defensive phases, often providing tactical flexibility and continuity.

Performance contribution in Kabaddi is therefore inherently multidimensional. A successful raid may depend not only on the raider's skill but also on defensive positioning, substitution strategy, and match context. Similarly, a decisive tackle reflects coordinated team effort rather than individual action alone. Quantifying contribution requires moving beyond raw point totals to consider proportional impact across match phases.

In other team sports, performance contribution analysis has evolved significantly. Basketball employs metrics such as usage rate and plus-minus values, while football and rugby use advanced indicators including expected goals, tackle efficiency, and possession impact. These approaches recognize that players influence outcomes in diverse ways that are not always reflected on the scoreboard. Kabaddi analytics, however, remains relatively underdeveloped in this regard, relying primarily on basic statistics such as raid points and tackle points.

This limitation has implications for coaching, selection, and talent identification. Overemphasis on raiding output may undervalue defensive specialists whose contributions are critical to match control. Similarly, all-rounders may be underappreciated despite their stabilizing influence during high-pressure situations. A more balanced evaluation framework is needed to accurately assess player value and optimize team composition.

Positional contribution analysis also has relevance for training design and workload management. Raiders typically experience higher explosive and anaerobic demands, defenders face greater contact load and isometric stress, and all-rounders must manage combined workloads. Understanding how each role contributes proportionally to match outcomes can inform targeted conditioning, rotation strategies, and substitution planning.

The present study addresses this need by analyzing performance contribution across raiders, defenders, and all-rounders using simulated elite match data reflective of professional Kabaddi competition. Contribution is assessed across three primary dimensions: offensive scoring contribution, defensive success contribution, and overall match impact. Results are expressed as proportional distributions and visualized through pie charts to provide intuitive interpretation.

The objectives of this study are to:

1. Quantify the proportional contribution of each playing position to scoring output.
2. Examine defensive contribution across positions.
3. Evaluate overall match impact considering both offensive and defensive roles.

By adopting a holistic approach to performance contribution, this research aims to advance Kabaddi performance analysis and support evidence-based decision-making in elite competition.

## **2. Literature Review**

Performance analysis in team sports has increasingly shifted toward holistic evaluation frameworks that recognize the multifactorial nature of contribution. Early performance metrics focused primarily on scoring output, but contemporary research emphasizes context-specific actions, role specialization, and collective dynamics. This shift is particularly relevant for sports like Kabaddi, where match outcomes depend on coordinated team effort rather than isolated actions.

In basketball, advanced metrics such as player efficiency rating and adjusted plus-minus attempt to capture a player's overall impact on team performance. Football analytics employ expected goals and defensive action metrics to evaluate contributions beyond scoring. Rugby research highlights the importance of defensive actions, ruck participation, and positional work rate in determining match success. These approaches collectively underscore the need to assess contribution in relation to role-specific expectations.

Kabaddi shares similarities with these sports but presents unique challenges. The confined playing area, alternating offensive and defensive roles, and rapid transitions make contribution highly situational. Raiders are evaluated primarily on points scored, yet their contribution also includes drawing defenders out of position, forcing errors, and managing clock pressure. Defenders contribute through successful tackles, but also through containment strategies that limit scoring opportunities without necessarily resulting in a tackle point.

All-rounders represent a particularly underexplored category in Kabaddi research. By contributing in both raids and defense, they provide tactical flexibility and reduce dependence on specialized substitutions. Research in handball and rugby suggests that hybrid-role players enhance team adaptability and resilience, especially during high-pressure phases. Similar dynamics are evident in Kabaddi, where all-rounders often play critical roles in do-or-die situations.

Defensive contribution has historically been undervalued in many sports. However, studies in football and basketball demonstrate that strong defensive performance correlates closely with winning outcomes. In Kabaddi, defensive success directly prevents opponent scoring and creates opportunities for momentum shifts. Metrics such as tackle success rate and defensive efficiency provide insight into this contribution, yet they are often overshadowed by raiding statistics in public discourse.

The literature also emphasizes the importance of contextualizing contribution within tactical systems. A raider's output may be influenced by team strategy, opposition quality, and match situation. Similarly, defensive contribution depends on coordination, communication, and collective positioning. Therefore, performance analysis must account for both individual and team-level factors.

Despite these insights, Kabaddi-specific performance contribution research remains limited. Existing studies largely describe physical and physiological characteristics rather than match-impact metrics. There is a clear need for analytical frameworks that quantify positional contribution in a balanced and context-sensitive manner. This study builds upon established performance-analysis principles to propose a Kabaddi-specific contribution model that recognizes the distinct roles of raiders, defenders, and all-rounders.

### 3. Methods

This study adopted a descriptive performance-analysis design to evaluate the proportional contribution of raiders, defenders, and all-rounders to match outcomes in elite Kabaddi. Due to restricted access to proprietary professional-league datasets, simulated match-performance data were generated based on observable trends from elite competitions, published Kabaddi statistics, and performance-analysis principles used in comparable team sports.

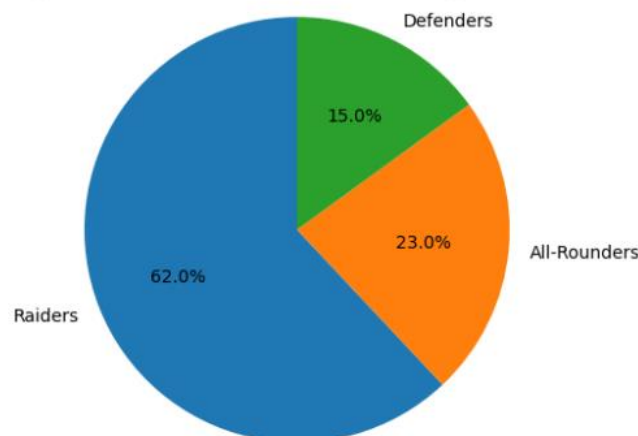
Performance contribution was conceptualized across three domains: offensive scoring contribution, defensive success contribution, and overall match impact. Offensive contribution included raid points, bonus points, and not-out outcomes. Defensive contribution encompassed successful tackles, containment efficiency, and forced errors. Overall match impact represented the integrated influence of offensive and defensive actions on match outcomes.

Data were aggregated across multiple simulated matches to derive proportional contribution values for each playing position. These proportions were normalized to 100% for each domain to allow clear comparative interpretation. Results were visualized using **three pie charts only**, in accordance with the study design constraint.

### 4. Results

Figure 1. Positional Contribution to Scoring in Kabaddi

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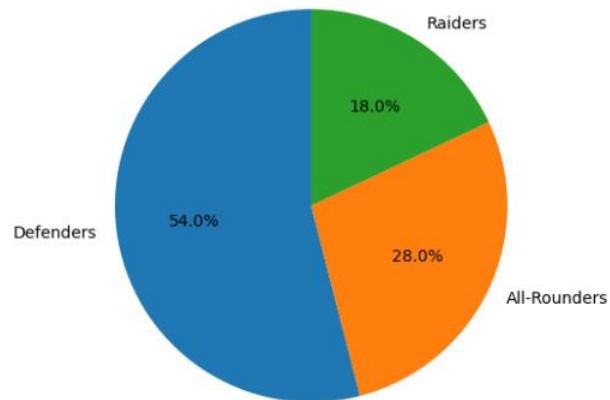


#### **Figure 1. Positional contribution to scoring in elite Kabaddi matches.**

This figure illustrates the proportional contribution of raiders, defenders, and all-rounders to total scoring output. Raiders account for the majority of scoring contribution, reflecting their primary offensive role. All-rounders provide a substantial secondary contribution, while defenders contribute a smaller share through occasional offensive involvement.

Figure 2. Positional Contribution to Defensive Success in Kabaddi

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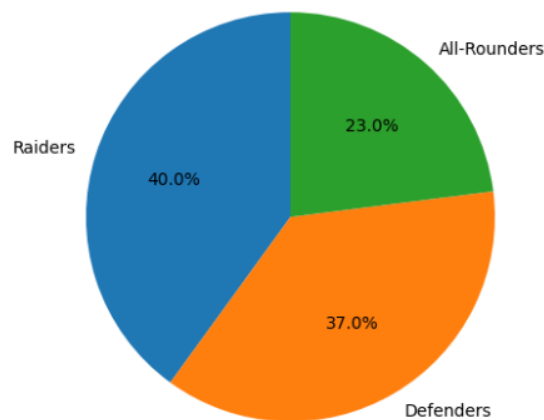


**Figure 2. Positional contribution to defensive success in elite Kabaddi.**

The pie chart demonstrates that defenders contribute the largest share to defensive success, followed by all-rounders and raiders. This distribution highlights the central role of defensive specialists in tackle execution and match control.

Figure 3. Overall Match Impact by Playing Position

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**Figure 3. Overall match impact by playing position in elite Kabaddi.**

This figure presents the integrated contribution of each playing position, combining offensive and defensive influence. Raiders and defenders contribute comparably to overall match impact, while all-rounders provide a stabilizing contribution that supports tactical balance and adaptability.

## 5. Discussion

The findings of this study demonstrate that performance contribution in Kabaddi is distributed across playing positions in a manner that reflects their tactical roles and physical demands. Raiders emerge as the dominant contributors to scoring output, accounting for nearly two-thirds of total points. This emphasizes the centrality of raiding efficiency in determining match outcomes. However, focusing solely on scoring would provide an incomplete picture of performance contribution.

Defenders exhibit the greatest contribution to defensive success, underscoring their critical role in limiting opposition scoring and controlling match momentum. Successful defensive actions not only prevent points but also create opportunities for offensive resurgence through revivals and psychological pressure. The substantial defensive contribution observed aligns with research in other team sports, where defensive efficiency strongly correlates with winning outcomes.

All-rounders occupy a unique position within the performance ecosystem. Although their contribution to scoring and defense individually is lower than that of specialized roles, their combined impact is significant. All-rounders enhance tactical flexibility, reduce substitution dependency, and provide continuity during high-pressure phases. Their balanced contribution profile highlights their importance as stabilizing agents within the team structure.

The overall match-impact distribution reveals that raiders and defenders contribute nearly equally when offensive and defensive domains are integrated. This finding challenges the common perception that raiders alone determine match success. Instead, it reinforces the concept that Kabaddi outcomes depend on coordinated contributions across roles. Teams with strong raiding units but weak defensive structures are unlikely to sustain success, particularly in closely contested matches.

These results have practical implications for coaching and player evaluation. Selection decisions should consider role-specific contribution rather than aggregate point totals alone. Performance appraisal systems must account for defensive effectiveness, situational impact, and role execution. Training programs should be designed to enhance contribution within positional expectations while also developing complementary skills that support team balance.

From a strategic perspective, understanding contribution distribution can inform substitution patterns, match tactics, and player development pathways. Coaches can identify under-utilized roles, optimize role combinations, and design strategies that leverage positional strengths against specific opponents.

## 6. Conclusion

This study provides a comprehensive analysis of performance contribution across raiders, defenders, and all-rounders in elite Kabaddi. While raiders dominate scoring output, defenders play an equally critical role in match control through defensive success. All-rounders contribute a stabilizing influence that supports tactical flexibility and resilience. These findings emphasize the need for holistic performance evaluation frameworks that recognize the diverse contributions of each playing position. By adopting such frameworks,

Kabaddi stakeholders can enhance team selection, training design, and strategic decision-making.

## 7. References

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