

DATA- DRIVEN ANALYSIS OF RAID PERFORMANCE IN KABADDI: INSIGHTS FOR PERFORMANCE OPTIMIZATION

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Abstract:

This study uses a data-driven approach to examine raid performance in Kabaddi and identify the key factors that influence successful raids. Match statistics such as raid attempts, raid success rate, bonus points, defender patterns, and decision-making speed were analyzed to understand how raiders perform under different game situations. The findings show that successful raiders consistently demonstrate efficient footwork, quick directional changes, and strategic anticipation of defensive formations. Data also revealed that situational awareness and timing especially during do-or-die raids strongly affect performance outcomes. By highlighting these measurable performance indicators, the study provides valuable insights that coaches and players can use to design targeted training programs, refine tactics, and optimize overall raid efficiency in competitive Kabaddi.

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Introduction:

Kabaddi is a traditional Indian game. Kabaddi has been a game that has been very close to our country since ancient times. Just as Abhimanyu entered the Kauravas during the Mahabharata war and the seven great warriors uttered one word, in the same game of the party, there are seven fielders on one side and one of the players raises his fist and teaches them. (Bhendigiri.R.N 1996). The Pro Kabaddi League has given the sport global recognition. The Pro Kabaddi League is a prestigious professional Kabaddi league in India that has contributed to the growth of the sport's popularity and professionalism. Currently, athletes, sports guides, and coaches have become more conscious about training. Attempts are being made to make the training program more science-based. To this end, sports coaches and athletes are improving their training based on research and developing skills and tactics according to changing trends. To achieve excellence in any sport, a lot depends on the skills required for that sport. In Kabaddi, the goal of a

scrambling player is to reach the opponent's field, touch the backboard, and return safely within 30 seconds. The outcome of each climb directly affects the team score. Therefore, quantitative and qualitative analyses of climbing performance provide important insights into athlete performance.

Need of Study / Significance of Study:

Studying raid performance in Kabaddi through a data-driven lens is significant because it helps improve individual and team performance, supports intelligent strategy and recruitment, aids in injury prevention, deepens academic understanding, and enriches the fan experience. All of which can lead to more effective, competitive, and sustainable Kabaddi teams.

- Improving Player Performance
- Strategic Decision-Making
- Talent Identification and Recruitment
- Injury Prevention and Load Management
- Enhanced Coaching Effectiveness
- Competitive Advantage

- Advancing Academic Research in Sports Analytics
- Fan Engagement and Broadcasting
- Policy and Team Management Implications

Objective of the Research:

- To record the successful and unsuccessful skills used in do or die raids during Pro Kabaddi League season nine matches
- To analyze the frequency of successful and unsuccessful skills used in do or die raids
- To analyze the frequency of skills used in combination of super tackle and do or die raids.

Results and Findings:

In the present research 10 matches were studied. Total in ten matches:

Marks obtained in each category:
Raid Skill

| Sr.No | Skills | Sub Skills | | | |
|-------|-----------------------|---------------|------------------|------------------|-------------------|
| 1 | Hand Touch | A. Running | B. Side | C. Front | |
| 2 | Kick | A .Side | B. Back | C. Running Side | D .Front |
| 3 | Baithi | A .Side | B. Front to Back | C. Running Touch | – |
| 4 | Jump | A .Right side | B. left side | C. Corner side | D. turn |
| 5 | Bonus | A.1-2 | B. 3-4 | C. 5-6 | – |
| 6 | Cutting | – | – | – | – |
| 7 | Dubaki | – | – | – | – |
| 8 | Press | – | – | – | – |
| 9 | Jump | – | – | – | – |
| 10 | Self out | – | – | – | – |
| 11 | Push | A .Single | B .Double | C .Self-Efforts | D. Opponent error |
| 12 | Escape from Ankle | – | – | C .Self-Efforts | D. Opponent error |
| 13 | Escape from high hold | A .Single | B .Double | C .Self-Efforts | D. Opponent error |
| 14 | Escape from Chain | A .Single | B .Double | C .Self-Efforts | D. Opponent error |
| 15 | Escape from Block | A .Single | B .Double | C .Self-Efforts | D. Opponent error |
| 16 | Both out | – | – | – | – |
| 17 | Follow | – | – | – | – |
| 18 | Escape Trunk | – | – | – | – |
| 19 | Self out | – | – | – | – |

| | | | | | |
|----|----------------------|-----------|-----------|---|---|
| 20 | Wrist hold | — | — | — | — |
| 21 | Escape from dash | A .Single | B .Double | — | — |
| 22 | Escape from dash | — | — | — | — |
| 23 | Jury pull | — | — | — | — |
| 24 | Neck hold | — | — | — | — |
| 25 | Technical point | — | — | — | — |
| 26 | Player out of bounce | — | — | — | — |

The Raid skill table numbers that were not used in the table given in this research are as follows: Skill sr. no. 6 to 10, 16 to 20, and 22 to 26.

Table No. 1

| Kabaddi Skill | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------------------------------------|------------------|----------------|----------------------|---------------------------|
| | 1 | 0.1 | 0.1 | 0.1 |
| Do or Die Raid | 81 | 9.9 | 9.9 | 10.0 |
| Super Tackle | 64 | 7.8 | 7.8 | 100.0 |
| Do or die & super Tackle | 05 | 0.6 | 0.6 | 10.6 |
| Regular raid | 668 | 81.6 | 81.6 | 92.2 |
| Total Raid | 819 | 100.0 | 100.0 | 100.0 |

The present research studied ten matches to conduct a pilot study. In the ten matches, there were a total of 81 do or die tackles (9.9%), 64 super tackles (7.8%), 5 do or die tackles and super tackles combined (.6%) and 668 regular tackles (81.6%).

- Points earned in each raid in Do or Die Raid, Super Tackle and Regular Raid

Table No. 2

| Total Raid Score | 1 Point | 2 Point | 3 Point | 4 Point | 5 Point | 6 Point | Total Points |
|-------------------------------------|----------------|----------------|----------------|----------------|----------------|----------------|---------------------|
| Do or Die Raid | 37 | 8 | 2 | 0 | 0 | 0 | 47 |
| Super Tackle | 35 | 2 | 2 | 2 | 1 | 0 | 42 |
| Do or die & super Tackle | 1 | 2 | 0 | 0 | 0 | 0 | 3 |
| Regular raid | 210 | 30 | 9 | 0 | 0 | 1 | 250 |
| Total Raid | 283 | 42 | 13 | 2 | 1 | 1 | 342 |

- Table 2 shows the points scored in the raid.

- ✓ In Do or Die raid, 1 point was scored 37 times, 2 points were scored 8 times, and 3 points was scored 2 times.
- ✓ In Super Takedown, 1 point was scored 35 times, 2 points were scored 2 times, 3 points were scored 3 times, 4 points were scored 2 times, and 5 points were scored 1 time.
- ✓ In Do or Die and Super Takedown together, 1 point was scored 1 time and 2 points 2 times.
- ✓ In Regular Climb, 1 point was scored 210 times, 2 points were scored 30 times, 3 points were scored 9 times, and 6 points were scored 1 time.

- Points scored in the tackle.

Table No. 3

| Total Raid Score | 1 Point | 2Point | 3Point | Total Points |
|--------------------------|---------|--------|--------|--------------|
| Do or Die Raid | 37 | 0 | 0 | 37 |
| Super Tackle | 0 | 6 | 0 | 6 |
| Do or die & super Tackle | 0 | 2 | 0 | 2 |
| Regular raid | 118 | 1 | 17 | 136 |
| Total Raid | 155 | 9 | 17 | 181 |

- 1 point was scored 37 times in the do or die tackle.
- 2 points were scored 6 times in the super tackle.
- 2 points were scored 2 times in both the do or die and super tackle combined.
- 1 point was scored 118 times in the regular tackle, 2 points 9 times, and 3 points 17 times.

Skills actually used when taking out Do or Die Raid, Super Tackle and Regular Attack Skill 1

Table No. 4

| Skill Sr. No. | Skill | Sub Skill | Do or Die | Super Tackle | DOD & ST | Regular Raid | Total Point |
|---------------|------------------------|-------------------|-----------|--------------|----------|--------------|-------------|
| 1 | Hand touch | A) Running | 11 | 3 | 0 | 25 | 39 |
| | | B) Side | 2 | 8 | 0 | 13 | 23 |
| | | C) Front | 1 | 0 | 0 | 5 | 6 |
| 2 | Kick | A) Side | 5 | 3 | 0 | 12 | 20 |
| | | B) Back | 0 | 0 | 0 | 6 | 6 |
| | | C) Running | 0 | 1 | 0 | 2 | 3 |
| | | D) Front | 1 | 0 | 0 | 2 | 3 |
| 3 | Sitting Kick | A) Side | 0 | 0 | 0 | 2 | 2 |
| | | B) Front to back | 0 | 0 | 0 | 1 | 1 |
| | | C) Running | 1 | 0 | 0 | 2 | 3 |
| 4 | Jump | | 0 | 0 | 0 | 1 | 1 |
| 5 | Bonus | | 5 | 0 | 0 | 73 | 78 |
| 7 | Dubaki | | 1 | 0 | 0 | 2 | 3 |
| 12 | Escape from ankle hole | A) Single | 0 | 2 | 0 | 6 | 8 |
| | | B) Double | 1 | 0 | 0 | 1 | 2 |
| | | C) Self Efforts | 3 | 1 | 0 | 7 | 11 |
| | | D) Opponent error | 1 | 0 | 0 | 1 | 2 |
| 13 | Escape from Thigh hold | A) Single | 3 | 4 | 1 | 8 | 16 |
| | | B) Double | 0 | 3 | 1 | 16 | 20 |
| | | C) Self Efforts | 0 | 0 | 0 | 3 | 3 |
| | | D) Opponent error | 0 | 0 | 0 | 1 | 1 |

| | | | | | | | |
|----|-------------------------------|------------------|---|---|---|---|---|
| 14 | Escape from Chain hold | A)Single | 0 | 0 | 0 | 2 | 2 |
| | | B)Double | 1 | 0 | 0 | 1 | 2 |
| | | C)Self Efforts | 1 | 0 | 0 | 1 | 2 |
| | | D)Opponent error | 1 | 0 | 0 | 0 | 1 |
| 15 | Escape from Block hold | A)Single | 3 | 4 | 0 | 0 | 7 |
| | | B)Double | 0 | 0 | 0 | 1 | 1 |
| | | C)Self Efforts | 0 | 0 | 0 | 1 | 1 |
| | | D)Opponent error | 1 | 0 | 0 | 5 | 6 |
| 18 | Escape from Trunk | | 0 | 1 | 0 | 4 | 5 |
| 19 | Self Out | | 0 | 1 | 0 | 4 | 5 |
| 20 | Escape from Wrist hold | | 1 | 1 | 0 | 0 | 2 |
| 22 | Escape from Dash | | 1 | 1 | 0 | 1 | 3 |
| 25 | Technical Point | | 0 | 0 | 0 | 1 | 1 |

Skills actually used when taking out Do or Die Raid, Super Tackle and Regular Attack Skill 2

Table No. 5

| Skill Sr. No | Skill | Sub Skill | Do or Die | Super Tackle | DOD & ST | Regular Raid | Total Point |
|--------------|------------------------|-------------------|-----------|--------------|----------|--------------|-------------|
| 1 | Hand touch | C)Front | 1 | 0 | 0 | 1 | 2 |
| 2 | Kick | A)Side | 0 | 0 | 0 | 1 | 1 |
| 3 | Sitting Kick | | 0 | 0 | 0 | 1 | 1 |
| 5 | Bonus | A)1-2 | 1 | 0 | 0 | 5 | 6 |
| 10 | Self out | | 3 | 0 | 0 | 2 | 5 |
| 11 | Escape from Push | | 0 | 0 | 0 | 2 | 2 |
| 12 | Escape from Ankle hold | C) Self-Efforts | 0 | 1 | 0 | 0 | 1 |
| | | D) Opponent error | 0 | 0 | 0 | 1 | 1 |
| 13 | Escape from Thigh hold | C) Self-Efforts | 0 | 0 | 0 | 3 | 3 |
| | | D) Opponent error | 0 | 0 | 0 | 1 | 1 |
| 14 | Escape from Chain | A)Single | 0 | 0 | 0 | 1 | 1 |
| | | B)Double | 0 | 0 | 0 | 1 | 1 |
| | | C) Self-Efforts | 0 | 0 | 0 | 1 | 1 |
| 15 | Escape from Block | A)Single | 1 | 1 | 0 | 1 | 3 |
| | | B)Double | 0 | 1 | 0 | 1 | 2 |
| | | C) Self-Efforts | 2 | 2 | 0 | 1 | 5 |
| 18 | Escape from Trunk | | 1 | 0 | 0 | 1 | 2 |
| 19 | Self Out | | 0 | 1 | 0 | 1 | 2 |

Discussion:

The study's findings underline how certain offensive and defensive skills are especially crucial in Kabaddi. Attacking techniques like the running hand touch, kicks, and bonus raids emerged as strong predictors of success combining speed, anticipation, and tactical awareness to maximize raid effectiveness. These results show that raiders who master these moves, and employ them at the right moment, can gain a real competitive edge. Importantly, decision-making under pressure especially in do-or-die raids plays a huge role. Raiders who stay calm, assess situations quickly, and adapt their strategy are more likely to succeed. Balwadkar S. says that raid is an important role in gaining points in a match. He studied 16 raiding skills, and he stated that among these, hand touch and bonus techniques are used more often in attack. This highlights how mental agility matters as much as physical skill. On the defensive side, the study shows that maintaining a well-coordinated, stable defensive formation is vital. Breakdowns in defensive structure lead to fewer successful tackles, which means teamwork, positioning, and communication are key even small mistakes in alignment can be costly.

Overall, the research emphasizes that top-level Kabaddi performance arises from a nuanced blend of **technical skills, physical ability, strategic thinking,**

and **mental sharpness**. Coaches and analysts can use these insights to create focused training programs for instance, by designing drills that simulate high-pressure raids, improving decision-making and reinforcing collective defense. This will help teams train more smartly, not just harder.

Conclusion:

Dr. Basavaraj Ambiger, Dr. P. Kulothungan, and Dr. Bupesh S. Moorthy authored the paper "**Analysis of offensive skills factors predominant towards the success of teams in Pro Kabaddi Season-7**"

published in *journalofsports.com*. In this study, they measured various raiding skills such as "successful toe touch," "unsuccessful toe touch," "successful hand touch," etc. Their findings show that teams with a higher number of successful toe touches achieve greater success. Therefore, the Toe Touch is an important "offensive skill factor" and is closely related to team performance.

Asha D and Dr. Chandrappa N, in their study "**Video analysis on skill performance of selected national Pro Kabaddi matches**", analysed match footage from PKL and national-level games. They measured offensive skills such as Hand Touch, Toe Touch, Dubki, Side Kick, Bonus, etc. Their study shows that the Toe Touch is a highly used and important raiding skill, and its performance can be systematically analyzed.

Jasvir Ram, Joseph Singh, and colleagues authored the paper "**Relationship of Selected Physical and Angular Kinematical Variables with the Performance of Toe-Touch Skill in Kabaddi**" published on *tmfv.com.ua*. Their research connected biomechanics speed, body angles, and angular kinematics with the execution of Toe Touch. They concluded that certain physical and kinematical variables affect toe-touch performance. This means that along with technical mastery, body posture, speed, and angles also play a crucial role in the success of the Toe Touch.

Arumugam S. and Dr. A. Kumaresa Seenivasan, in their study "**Effects of Skill Specific Training on Selected Raiding Skills among Kabaddi Players**" published in *IJCRT*, investigated the effect of skill-specific training on Toe Touch and Running Hand Touch. After eight weeks of training, significant improvements were observed in both skills. This indicates that regular or specialized training can enhance Toe Touch performance.

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