



## **Study of Explosive Power as Performance Enhancing Factor Among Kabaddi Players**

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### **Abstract:**

The study of power as a performance-enhancing factor among Kabaddi players is essential to comprehend the relationship between power development and athletic performance in this dynamic sport. Power plays a crucial role in Kabaddi, as it influences the ability to generate force rapidly, efficiently, and explosively, enabling athletes to execute actions such as sprinting, jumping, and tackling opponents effectively. This abstract provides an overview of the methodologies used to investigate power in Kabaddi performance. Performance tests, including vertical jump tests, standing broad jump tests, and agility tests, assess power-related abilities. Strength training interventions, targeting power development, involve exercises such as squats, lunges, power cleans, and plyometrics. Biomechanical analysis using motion capture systems and force plates evaluates the mechanics of Kabaddi movements. Comparative studies compare power-related characteristics and performance outcomes between elite and non-elite players. Longitudinal studies track the progress of players over time, measuring changes in strength, speed, agility, and on-field performance. These research approaches aim to enhance our understanding of power's impact on Kabaddi performance, provide evidence-based recommendations for training, and contribute to the development of Kabaddi players.

**Key Words :** Standing Broad Jump, Performance Enhancement, Raider, Antis

### **Introduction:**

Power plays a crucial role in the performance of Kabaddi players, as it directly influences their ability to execute explosive and forceful movements on the field. Kabaddi is a highly dynamic and physically demanding sport that requires athletes to exhibit exceptional power in order to succeed. Therefore, the study of power as a performance-enhancing factor among Kabaddi players becomes essential to understand the relationship between power development and overall athletic performance.

Power in Kabaddi encompasses the capacity to generate force rapidly, efficiently, and explosively. It directly affects critical aspects of the game, such as sprinting, jumping, tackling opponents, and evasive manoeuvres. Developing and maximizing power can significantly contribute to an athlete's performance by enhancing their ability to execute these actions with precision and effectiveness.

To comprehensively examine the impact of power on Kabaddi performance, researchers employ various methodologies. Performance tests, such as vertical jump tests, standing broad

jump tests, and agility tests, allow for the evaluation of power-related abilities among athletes. Strength training interventions, tailored specifically for Kabaddi players, focus on exercises that promote power development, such as squats, lunges, power cleans, and plyometric exercises.

In addition to performance tests and strength training, biomechanical analysis provides valuable insights into the role of power in Kabaddi movements. By employing motion capture systems and force plates, researchers can analyze the mechanics of sprints, tackles, and evasive maneuvers to understand the contribution of power to these actions.

Comparative studies between elite Kabaddi players and non-elite players shed light on the significance of power as a distinguishing factor among athletes of varying skill levels. By examining the power-related characteristics and performance outcomes of these players, researchers can identify the impact of power on overall Kabaddi performance.

Furthermore, longitudinal studies tracking the progress of Kabaddi players over an extended period can evaluate the effectiveness of power training programs. By measuring changes in strength, speed, agility, and on-field performance metrics, these studies provide valuable insights into the long-term effects of power training on Kabaddi players.

Ultimately, by conducting in-depth studies on the role of power in Kabaddi performance, researchers aim to enhance our understanding of how power development can be optimized to improve athletes' capabilities in the sport. The findings of such studies will provide evidence-based recommendations for coaches and players seeking to enhance their power-related abilities and ultimately excel in the game of Kabaddi.

The study of power as a performance-enhancing factor among Kabaddi players involves investigating the relationship between power development and the overall athletic performance of these players. Power is an essential component in Kabaddi, as it influences the ability to generate force quickly, explosively, and efficiently, which is crucial for successful movements such as sprinting, jumping, and tackling opponents.

**To assess the impact of power on Kabaddi performance, researchers may employ various methodologies, including:**

- **Performance Tests:** Athletes can undergo specific performance tests to evaluate their power-related abilities. These tests may include vertical jump tests, standing broad jump tests, and agility tests that measure quickness and change of direction.
- **Strength Training Interventions:** Researchers can design strength training programs tailored to improving power among Kabaddi players. These programs may focus on exercises such as squats, lunges, power cleans, and plyometric exercises, which target explosive movements and power development.
- **Biomechanical Analysis:** Motion capture systems and force plates can be used to analyze the biomechanics of Kabaddi movements, such as sprints, tackles, and evasive



maneuvers. This analysis can help identify the contribution of power to these movements and evaluate the effectiveness of power training in enhancing performance.

- **Comparative Studies:** Researchers can compare the power-related characteristics and performance outcomes between elite Kabaddi players and non-elite players. This comparative analysis can provide insights into the significance of power as a differentiating factor among players of varying skill levels.
- **Longitudinal Studies:** Long-term studies tracking the progress of Kabaddi players over a training season or multiple seasons can assess the impact of power training on performance improvements. These studies may measure changes in power-related parameters, such as strength, speed, and agility, along with on-field performance metrics.

By conducting such studies, researchers aim to understand the influence of power on Kabaddi performance, determine optimal training methods to enhance power, and provide evidence-based recommendations for coaches and players seeking to improve their abilities in the sport.

### **Review of Literature**

(Booth and Orr 2016) studied “effects of plyometric training on selected motor components in semi-professional kabaddi players” In the sport of Kabaddi, the specific fitness required includes references to strength, sprinting, and agility. These attributes enable the player to confront the physiological and psychological challenges that he would face during the course of his career as a competitive athlete. Kabaddi players who engage in plyometric training may notice gains in their vertical leap performance, acceleration, leg strength, muscular power, increased joint awareness, and overall proprioception.

(Parmar 2017) studied “KABADDI: From an intuitive to an quantitative approach for analysis, predictions and strategy” Kabaddi is an Indian team sport that involves physical contact between players. Because of the way the game is played, it involves a great deal of strategy and produces a substantial amount of data. However, the data that is collected from kabaddi competitions has not been utilised up to this point, and as a result, both coaches and players rely significantly on their intuition when making judgments and developing strategy. The sport of kabaddi is analysed using a quantitative methodology in this research. The research draws its conclusions from an analysis that was carried out on the data collected at the 2016 Third Standard-style Kabaddi World Cup, which was organised by the International Kabaddi Federation. The dataset, which has 66 items spread across 31 variables and 33 matches, was vetted by hand. It contains data on those variables. In this study, traditional strategies and ideas associated with the sport of Kabaddi, such as attack and defence techniques, are discussed, and a quantitative perspective is provided on those traditional strategies and conceptions. A number of hypotheses are developed, and then the student's t-test is used to validate them. In addition, this article presents a quantitative method for profiling a whole competition in order to acquire a comprehensive comprehension of the capabilities possessed by a variety of teams. In addition,

a team-specific profiling, which involves testing hypotheses and visualising the results, is offered in order to acquire a more in-depth comprehension of the behaviour and performance of the team. In addition to that, different models for predicting the winner are presented in this study. The model-building comprises automatic feature selection approaches and variable importance analysis methodologies. Constructed and discussed include generalised linear models with and without elastic nets, recursive partitioning and regression trees, conditional inference trees, random forests, support vector machines (linear and radial), and neural network-based models. The results of a generalised linear model, an elastic net, a random forest model, and a neural network-based model can be combined with the help of ensemble models. These models integrate the results of generalised linear models and random forest models as the ensemble method. The research looks at different models and explores how their performance parameters compare to one another. According to the findings of other pieces of research, the ensemble technique does not improve accuracy. On the dataset used for cross-validation, the models obtain an accuracy of 91.67 percent to 100 percent, whereas on the test set, they achieve 78.57 percent to 100 percent. The results that were presented can be used to develop winning forecasts for usage in-game at any given moment to help enhance decision-making. The offered findings can be utilised in the design of agents and environments for the purpose of instructing artificial intelligence using a model of reinforced learning.

(Tadel 2018) studied “Effect of strength training on selected physical variables of kabaddi players” The goal of the present study was to determine whether or not kabaddi players could benefit from engaging in strength training and how it would affect certain aspects of their physical performance. In order to accomplish the goals of the study, thirty male inter-collegiate kabaddi players from Shri Govind Guru University Godhra were chosen at random to participate as subjects in the research. The range of their ages was from 17 to 21 years old. Both the Strength Training group (n = 15) and the control group (n = 15) were chosen at random from the pool of individuals. After then, all of the subjects gave their informed consent to take part in the research. Before (during the pre-test) and after (during the post-test) the training period, we conducted all of our testing (post-test). Group I of the strength training programme left the gym three times per week (on Monday, Wednesday, and Friday) for a total of six weeks to participate in strength training activities. Group II served as the control in this study. They did not take part in any specialised instruction on equivalent tasks that were given to the experimental group. The tests of speed (50 yard run), agility performance (10mts. 4 shuttle run test), and muscular endurance have been chosen as the relevant physical variables (Sit-up test). ANOVA was used to determine the mean difference between the pre-treatment and post-treatment states. The findings of this research indicate that strength training has the potential to improve speed, agility, and muscular endurance, particularly among male intercollegiate Kabaddi players.

(Pal 2019) studied “A Comparative Study of Conditioning for Kabaddi Players at Different Levels” This conditioning programme for the Kabaddi Player is intended to serve as an all-encompassing plan for the duration of the entire year. Kabaddi is a harsh sport that requires an athlete to be in good physical condition. Every month of the year, the Kabaddi player is required to put in significant effort to improve their conditioning. The exercises can be broken down into a pre-season programme and an off-season programme. To round off the preparation of the body for Kabaddi, the player needs to incorporate something that will give them greater



power, speed, agility, flexibility, balance, endurance, coordination, and many other products of physical fitness. It takes a lot of work to stay in this kind of physical shape, and kabaddi players have to put in a lot of effort because of their size and the physical demands of the game. Due to the fact that modern seasons often overlap, there are not many athletes that compete in two sports while attending a college or university. We live in an age of specialisation, and nowhere is this more evident than in the professional game of kabaddi. There is a lack of knowledge among many Kabaddi trainers and players regarding how to properly condition the body for the sport. The workouts that the trainers want the players to be sure to complete to strengthen old injuries can be marked by the trainers.

### Methodology

Data was collected from intercollege/ District/ State kabaddi tournaments among age group 17 to 25 years.

Leg strength was measured by Standing Broad Jump Test.

### Data Analysis

Beginners			
Sr. No	Weight	Height	Explosive Leg Strength (Beginners)
1	57	5"5	1.55
2	56	5"6	1.6
3	57	5"5	1.75
4	58	5"6	1.77
5	54	5"6	1.56
6	50	5"5	1.57
7	56	5"7	1.58
8	57	5"5	1.5
9	56	5"6	1.54
10	57	5"5	1.77
11	58	5"6	1.78
12	54	5"6	1.56
13	50	5"5	1.54
14	56	5"7	1.58
15	57	5"5	1.55
16	56	5"6	1.55
17	57	5"5	1.67
18	58	5"6	1.68
19	54	5"6	1.69
20	50	5"5	1.7
21	56	5"7	1.6
22	57	5"5	1.55
23	56	5"6	1.61
24	57	5"5	1.63

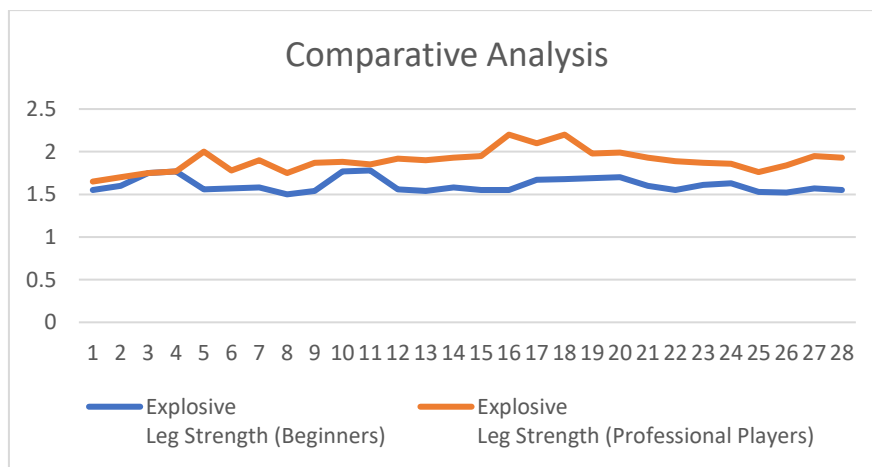
25	58	5"6	1.53
26	54	5"6	1.52
27	50	5"5	1.57
28	56	5"7	1.55

Data has been collected from team of Beginners female Kabaddi players and their Explosive leg strength has been measured through Standing Broad Jump Test.

Professional Players			
Sr. No	Weight	Height	Explosive Leg Strength
1	54	5"6	1.65
2	56	5"5	1.7
3	57	5"5	1.75
4	55	5"6	1.77
5	58	5"5	2
6	53	5"4	1.78
7	56	5"7	1.9
8	54	5"6	1.75
9	56	5"5	1.87
10	57	5"5	1.88
11	55	5"6	1.85
12	58	5"5	1.92
13	53	5"4	1.9
14	56	5"7	1.93
15	54	5"6	1.95
16	56	5"5	2.2
17	57	5"5	2.1
18	55	5"6	2.2
19	58	5"5	1.98
20	53	5"4	1.99
21	56	5"7	1.93
22	54	5"6	1.89
23	56	5"5	1.87
24	57	5"5	1.86
25	55	5"6	1.76
26	58	5"5	1.84
27	53	5"4	1.95
28	56	5"7	1.93

Data has been collected from team of Professional female Kabaddi players and their Explosive leg strength has been measured through Standing Broad Jump Test.

### Comparative Analysis



**Mean Scores :**

**Beginners : 1.60 Meters**

**Professional Players : 1.89 Meters**

From the analysis it has been observed that there is a significant difference between the Standing Broad Jump (SBJ). In beginners it has been observed as 1.60 meters where as in professional players it has been observed as 1.89 Meters.

**Conclusion:**

The study of power as a performance-enhancing factor among Kabaddi players is a vital area of research that provides valuable insights into the relationship between power development and athletic performance in the sport. Through various methodologies, including performance tests, strength training interventions, biomechanical analysis, comparative studies, and longitudinal studies, researchers have deepened their understanding of the role of power in Kabaddi.

The findings of these studies highlight the significance of power in Kabaddi, as it directly influences the ability of athletes to execute explosive movements, generate force quickly, and excel in actions such as sprinting, jumping, tackling opponents, and evasive maneuvers. By incorporating targeted strength training programs, focusing on exercises that enhance power development, Kabaddi players can improve their performance on the field.

Biomechanical analysis has further revealed the mechanics behind power-related movements in Kabaddi, providing a clearer understanding of how power contributes to successful execution. Comparative studies have shown that power can serve as a differentiating factor between elite and non-elite Kabaddi players, emphasizing its importance in achieving a high level of performance.

Longitudinal studies tracking the progress of Kabaddi players over time have demonstrated the effectiveness of power training programs in enhancing strength, speed, agility, and overall on-field performance. These studies have provided valuable evidence-based recommendations for coaches and players seeking to optimize their power-related abilities and maximize their potential in Kabaddi.

In conclusion, the study of power as a performance-enhancing factor among Kabaddi players has shed light on its crucial role in the sport. By understanding and effectively developing power, athletes can enhance their performance, gain a competitive edge, and excel in Kabaddi. Continued research in this area will further contribute to the development of evidence-based training strategies and the advancement of Kabaddi as a sport.

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