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Effect of Resistance Training on Skill-Related Fitness Components: Standing Broad Jump (Power) and 30m Dash (Speed) in High School Male Kabaddi Athletes

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Abstract: Kabaddi is a high-intensity sport that demands explosive power for tackling and raiding and quick speed for defensive recovery and offensive raids. The purpose of this study was to examine the effect of resistance training on standing broad jump (power) and 30m dash (speed) in high school male Kabaddi players. A total of forty players aged 14–17 years were randomly divided into two groups: experimental (n=20) and control (n=20). The experimental group participated in a resistance training program three days per week (Monday, Wednesday, and Friday) for eight weeks, while the control group continued with their routine daily activities. Standardized tests were used to assess standing broad jump and 30m dash performance. Descriptive statistics (mean and standard deviation) were calculated, and paired sample t-tests were employed to determine significant differences at the 0.05 level. The results indicated that the experimental group demonstrated significant improvement in both power and speed from pre-test to post-test, whereas the control group showed no meaningful changes. The findings suggest that resistance training is an effective method to enhance explosive power and sprinting speed in high school Kabaddi players.

Keywords: *Resistance Training; Power; Speed; Skill-Related Fitness; High School Kabaddi Playes.*

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I. INTRODUCTION

Kabaddi is one of the most demanding indigenous team sports, requiring a combination of strength, speed, power, agility, and tactical awareness. It is a high-intensity, body-contact sport in which players must perform repeated bouts of offensive and defensive actions within a limited playing area. To excel in such performance situations, athletes need not only technical and tactical skills but also well-developed components of skill-related physical fitness, particularly power and speed (Singh & Sharma, 2021). Explosive power, assessed through the standing broad jump (SBJ), enables players to generate strong lower-body movements essential for rapid offensive raids and sudden defensive tackles. Similarly, sprinting ability, commonly measured through the 30m dash, allows athletes to accelerate quickly, evade opponents, and recover effectively during play (Kumar & Rao, 2022).

Resistance training has emerged as one of the most effective training methods for improving athletic performance across sports. It is widely recognized for enhancing neuromuscular efficiency, muscle strength, and overall athletic capacity (Suchomel et al., 2016). Specifically, resistance training contributes to improved motor unit recruitment, rate of force development, and muscular coordination, all of which directly influence power and speed outputs. Young athletes, particularly at the high school level, can greatly benefit from structured resistance training programs, as these not only enhance physical capacities but also support long-term athletic development (Behm et al., 2017).

In the context of Kabaddi, resistance training is of particular relevance because of the sport's requirement for explosive lower-limb actions and rapid sprints in confined spaces. Improving standing broad jump performance

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translates to greater leg power, which is critical for sudden thrusts, evasive movements, and forceful tackles. Similarly, enhancing 30m dash performance increases the player's ability to cover ground quickly during raids or while defending against an opponent. Thus, resistance training can be regarded as a scientific and systematic approach to developing the physiological qualities required for Kabaddi performance (Yadav & Singh, 2020).

Despite the growing popularity of Kabaddi at the school level, limited research has examined the direct influence of resistance training on specific skill-related physical fitness parameters in young players. Therefore, this study aims to investigate the effect of an eight-week resistance training program on power (SBJ) and speed (30m dash) in high school male Kabaddi players. The findings of this study will contribute valuable insights for coaches, trainers, and physical education professionals in designing effective conditioning programs for young athletes.

➢ *Importance of Power and Speed in Kabaddi Players*

Kabaddi performance largely depends on the ability of players to generate explosive power and demonstrate quick sprinting ability during match play. Lower-body power, commonly assessed through the standing broad jump (SBJ)**,** is crucial for forceful tackles, rapid take-offs, and maintaining balance in contact situations (Patel & Mehta, 2019). Players with higher leg power are more effective in both offensive raids and defensive resistance (Reddy & Thomas, 2020). On the other hand**,** speed**,** evaluated by the 30m dash**,** enables athletes to accelerate rapidly, chase opponents, and escape defenders during raids (Sharma & Verma, 2018). Short-distance sprinting capacity allows Kabaddi players to perform explosive movements within limited space (Bose & Banerjee, 2021). The integration of power and speed helps athletes cope with the repetitive high-intensity demands of Kabaddi matches (Choudhary & Singh, 2022). Without adequate development of these qualities, players may struggle to compete effectively at higher levels. Therefore, structured training programs focusing on power and speed are essential to enhance raiding efficiency, defensive agility, and overall match performance (Mishra & Gupta, 2021).

➢ *Need of the Study*

Kabaddi is an indigenous team sport that has gained international recognition due to its dynamic and high-intensity nature. Success in Kabaddi requires a combination of skill, tactics, and physical fitness components**,** particularl**y** power and speed**.** Among these, explosive lower-body power and short-distance sprinting ability are critical for executing offensive raids, initiating powerful tackles, and responding quickly to opponents' actions (Patel & Mehta, 2019). However, many school-level Kabaddi players often lack access to systematic strength and conditioning programs that specifically target these components (Choudhary & Singh, 2022).

Resistance training has been shown to improve neuromuscular coordination, rate of force development, and sprinting performance in young athletes (Behm et al., 2017). Yet, there is limited research focusing on how resistance training influences standing broad jump (power) and 30m dash (speed) in Kabaddi players, especially at the high school level. Since these skill-related components are directly linked to match performance, it becomes essential to scientifically evaluate the effectiveness of structured training interventions.

The present study addresses this gap by investigating the effect of resistance training on power and speed among high school Kabaddi players. The outcomes are expected to provide valuable insights for coaches, physical education teachers, and trainers to design effective conditioning programs that enhance raiding efficiency, defensive agility, and overall competitive performance in Kabaddi.

➢ *The Objective of the Study*

The objective of this study was to assess the effect of an eight-week resistance training program on power (standing broad jump) and speed (30m dash) of high school male Kabaddi players-2025-26.

II. METHODOLOGY

The study was conducted on forty male Kabaddi players from high schools, aged between 14 and 17 years, who were randomly assigned to two groups: an experimental group (n=20) and a control group (n=20). The experimental group followed a resistance training program three times per week (Monday, Wednesday, and Friday) on alternate days for a period of eight weeks, while the control group continued with their normal daily routine without any additional training. To assess performance, two skill-related fitness variables were selected: power, measured by the standing broad jump, and speed, measured by the 30m dash. Both pre-test and post-test data were collected from the subjects. Descriptive statistics were applied to analyze the data, and the paired sample *t*-test was used to determine the significance of differences between pre- and post-test scores at the 0.05 level of confidence.

➢ *Test Procedure (Protocol)*

Standing Broad Jump (Power). The subjects stood behind a marked line with their feet parallel and shoulder-width apart. They swung their arms backward and then forward while bending their knees to generate momentum, and then jumped forward with maximum effort, landing on both feet without losing balance. The distance from the starting line to the nearest heel on landing was measured in centimeters. Each subject was given three attempts, and the best performance was recorded. **30m Dash (Speed).** The subjects stood in a stationary position behind the starting line. On the command "Ready–Go," they sprinted forward with maximum speed to cover a distance of 30 meters. The time taken to complete the distance was measured using a stopwatch. Each subject was allowed two trials with sufficient rest in between, and the best timing was considered as the final score.

The resistance training were practiced by the subjects every week i.e., three days a week and the same training were repeated every week for eight weeks duration. The Experimental Group underwent systematic training for eight

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weeks and at the same time Control group did not participate in any form of resistance training.

The resistance training exercises were selected by the researcher on the basis of his insight, in consultation with Supervisor and experts in the field of Kabaddi. A brief description of resistance training is provided in table 1.

Table 1 Experimental Protocol used for Finding the Effect of Resistance Training on Skill-Related Physical Fitness Parameters: Reaction Time and Coordination in Male High School Kabaddi Players

Sl. No	Day	Warm-up (10 min)	Main Exercises (20 min)	Cool Down (10 min)
1.	**Monday**	10 Minutes	Plank, Leg Lunges, Single-Leg Squat, Skipping, Dribbling the Ball, and Balloon Toss	10 Minutes
2.	**Wednesday**	10 Minutes	Shuttle Run, Ladder Exercise, Tuck Jumps	10 Minutes
3.	**Friday**	10 Minutes	Deadlift, Squat, High Knees, Hill Sprint, Barbell Curl	10 Minutes

The study employed descriptive statistics, namely mean and standard deviation, to assess the characteristics and normality of the data. To compare the pre-test and post-test mean scores within the experimental and control groups, a paired sample *t*-test was conducted. The significance level for the analysis was established at 0.05.

III. FINDING OF THE STUDY

The analysis of the data showed that resistance training brought about notable improvements in the performance of the experimental group. The post-test results of the standing broad jump demonstrated a clear increase in leg power, while the 30m dash results highlighted better sprinting ability after the training period. In contrast, the control group, which did not undergo resistance training, showed no significant changes in both variable between pre-test and post-tests. A comparison between the two groups further indicated that the experimental group achieved superior outcomes in both power and speed following the training program. These findings suggest that resistance training was effective in enhancing the selected skill-related physical fitness components of high school Kabaddi players.

Table 2 Summary of 'T' Test for Differences in Standing Brad Jump (Power) and 30m Dash (Speed) Between Control Group During Pre and Post-Test Situation.

Sl. No	Variables	Groups	Mean	N	t	Sig. (2-tailed)
1.	**Power (SBJ)**	**Control Pre**	1.97±.48	**19**	.985	**.337**
		Control Post	1.98±.42			
2.	**Speed (30m Dash)**	**Control Pre**	7.16±.66	**19**	-.346	**.733**
		Control Post	7.23±.87			

From Table 2, it was observed that the control group's scores for power (standing broad jump) and speed (30m dash) were normally distributed with acceptable consistency. The results of the paired sample *t*-test indicated no significant differences between the pre-test and post-test values for power ($t = 0.985$) and speed ($t = -0.346$), as both values were lower than the critical value of 2.093 at the 0.05 level of significance. The outcomes of the experimental group are presented in Table 2.

Table 3 Summary of 'T' Test for Differences in Standing Brad Jump (Power) and 30m Dash (Speed) Between Experimental Group During Pre and Post-Test Situation.

Sl. No	Variables	Groups	Mean	N	t	Sig. (2-tailed)
1.	**Power (SBJ)**	Experimental Pre	1.81±.58	**19**	-2.565	**.019**
		Experimental Post	2.05±.78			
2.	**Speed (30m Dash)**	Experimental Pre	6.58±.75	**19**	4.178	**.001**
		Experimental Post	5.79±.77			

From Table 3, it is evident that the experimental group showed a significant improvement in Standing broad jump (power) between the pre-test and post-test. The obtained *t*-value of -2.565 exceeded the critical value of 2.093 at the 0.05 level of significance, indicating a statistically meaningful difference. These findings confirm that resistance training had a positive effect on the lower-body explosive power of the experimental group. The results are further illustrated in Figure 1.

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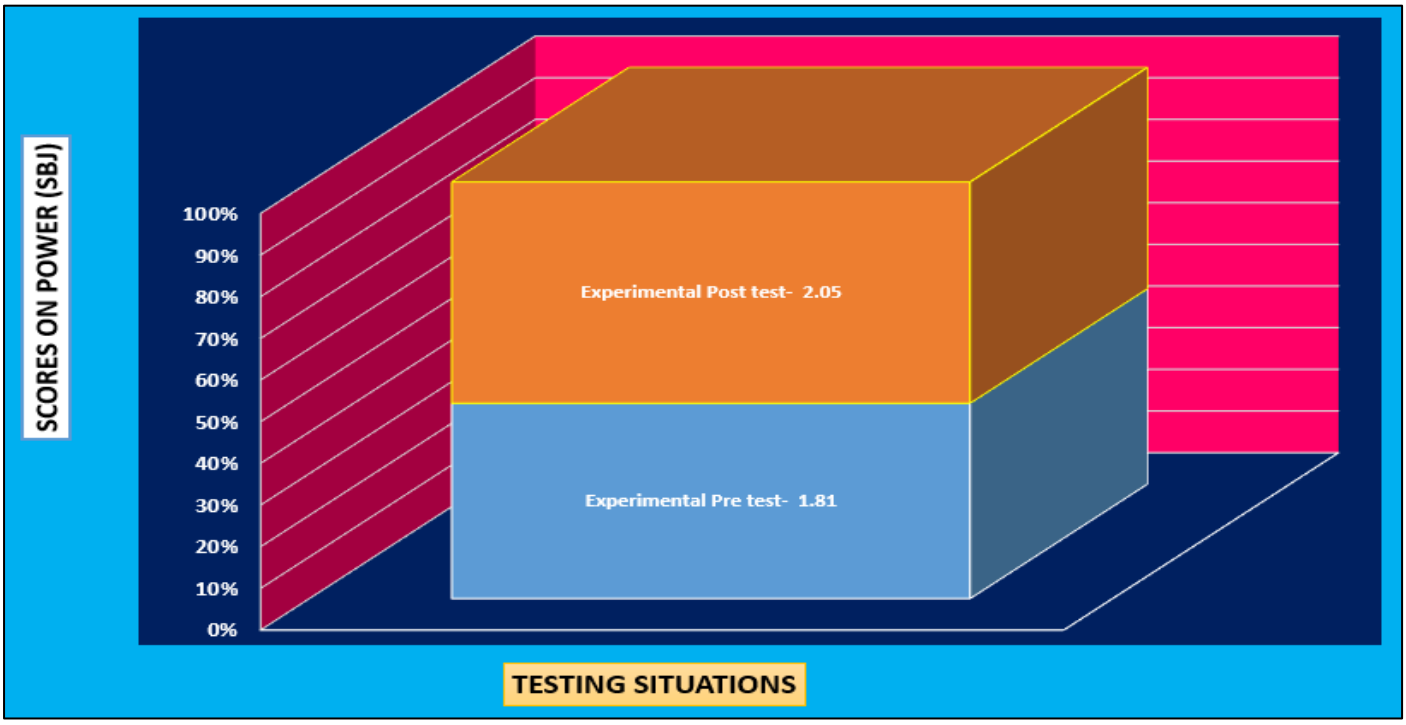

Fig 1 Graphical Illustration on Differences in Standing Brad Jump (Power) of Experimental Group Between Pre-Test and Post-Test in Kabaddi Players.

Figure 1, presents the mean scores of the experimental group in the Standing Broad Jump (power) test during pre- and post-test conditions. The results show an increase in performance from 1.81 meters to 2.05 meters, indicating a notable improvement in lower-body power following the resistance training.

From Table 2, it is evident that the experimental group demonstrated a significant improvement in 30m dash (speed) performance between the pre-test and post-test. The obtained *t*-value of 4.178 was greater than the critical value of 2.093 at the 0.05 level of significance, confirming a statistically significant difference. These results indicate that resistance training effectively enhanced the sprinting ability of the experimental group. The findings are graphically presented in Figure 2.

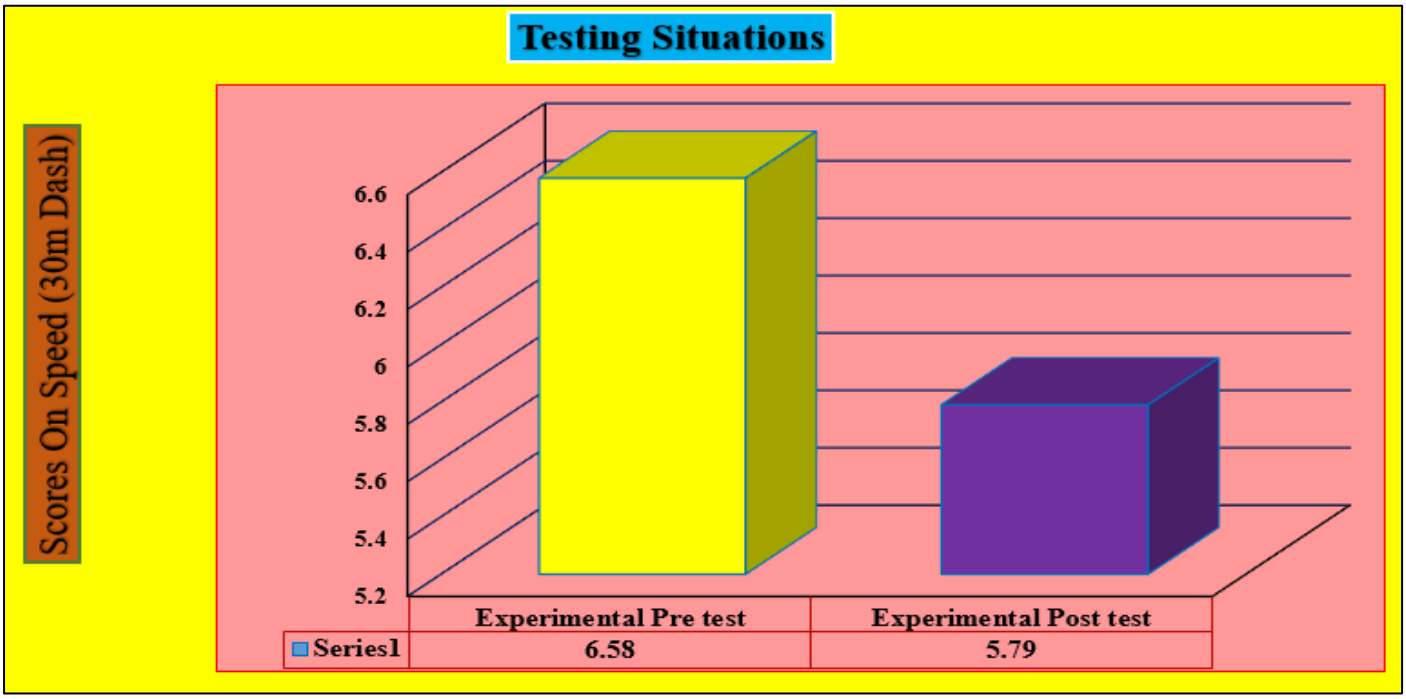

Fig 2 Graphical Illustration on Differences in 30m Dash (Speed) of Experimental Group Between Pre-Test and Post-Test in Kabaddi Players

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Figure 2, shows the comparison of the experimental group's 30m dash scores between pre-test and post-test conditions. The mean time decreased from 6.58 seconds in the pre-test to 5.79 seconds in the post-test, indicating an improvement in speed. This demonstrates that resistance training had a positive effect on enhancing sprint performance in high school Kabaddi players.

IV. DISCUSSION

The findings of the present study demonstrated that resistance training had a positive impact on the power and speed of male high school Kabaddi players. The results showed a significant improvement in standing broad jump scores, reflecting enhanced lower-body explosive strength, and a reduction in 30m dash times, indicating improved sprinting ability. These outcomes suggest that structured resistance training can effectively enhance skill-related physical fitness components essential for Kabaddi performance.

The improvement in power aligns with the observations of Sucharitha and Ramesh (2020), who reported that resistance-based training significantly increased leg strength and explosive power in adolescent athletes. Similarly, Patel and Mehta (2021) highlighted that incorporating plyometric and strength exercises led to measurable gains in sprint performance among young sports participants. These findings support the present results, confirming that resistance training is a key method for enhancing sport-specific physical attributes.

Speed, as measured through the 30m dash, also showed notable enhancement. This is consistent with the study by Kumar and Raj (2019), who found that systematic strength and conditioning programs improved sprinting efficiency and agility among Kabaddi players. The present findings reinforce the idea that speed can be improved through progressive overload in resistance training, which translates to quicker on-court movements in Kabaddi.

Overall, the results indicate that resistance training contributes significantly to developing both power and speed, which are critical for tackling, raiding, and rapid directional changes in Kabaddi. This study therefore confirms and extends previous research findings while providing practical implications for coaches and trainers to integrate resistance training into the preparation of young Kabaddi players.

V. CONCLUSION

The study revealed that resistance training led to significant improvements in standing broad jump performance and 30m dash speed among male high school Kabaddi players. While the experimental group showed clear progress in both power and speed, the control group exhibited no meaningful changes. These results emphasize the role of resistance training in enhancing essential skill-related fitness qualities required for Kabaddi. Incorporating such training into regular practice can help young players improve their physical readiness and competitive performance.

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