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# Examining The Influence of Resistance Circuit Training on Leg Strength Among Men Kabaddi Players

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**ABSTRACT**

Kabaddi involves quick movements, particularly during raids where players need explosive power to break through the defense and touch opponents. Strong legs enable players to push off quickly and generate the necessary force to maneuver effectively. Circuit training can incorporate exercises that mimic the movements and demands of Kabaddi, such as lunges, squats, pushing, pulling, and twisting motions. Examining how weight circuit training affected the lower body muscles of SRM IST Men Kabaddi players was the study's goal. Twenty male Kabaddi players from SRM IST in Tamil Nadu, India, were chosen at random to take part in this. Two equal groups of fifteen players each were formed. One group was used as the control group, and the other group engaged in weight circuit training. For twelve weeks, Group I trained with weight circuits three times a week, whereas Group II continued normal exercise activities in accordance with the curriculum without any special training. Leg strength, the selected criterion variable, was measured using a leg dynamometer. Both before and immediately following the instruction session, this variable was evaluated for both groups. To learn if there were any notable differences between the groups, covariance analysis was used. The overweight circuit training group exhibited remarkable improvements in leg strength, and the results indicated an important disparity in leg strength between the control group and the ones who underwent weight circuit training group.

***Keywords:*** *Kabaddi players, leg strength, and weight circuit training.*

## 1. INTRODUCTION

Leg strength is super important for kabaddi players. Imagine this: when you're playing kabaddi, you need to dash, dodge, and lunge with lightning speed. Your legs are like the engines powering your moves. Strong legs mean you can push off the ground quicker, making it harder for your opponents to catch you. [1] Plus, when you're raiding, you have to escape the clutches of defenders, and strong legs help you break free. Not only that, but kabaddi also demands balance and stability, especially when you're trying to tag opponents or defend your territory. Strong legs give you a solid base, making it easier to stay on your feet and maneuver swiftly. And let's not forget about tackling [2]. When you're on the defense, you need the strength to stop raiders dead in their tracks. Powerful legs help you execute tackles with precision and force, giving your team the upper hand [3]. Beyond the game, leg strength is crucial for preventing injuries. With all the sudden movements and changes in direction, weak legs can't handle the stress, leading to sprains or strains. But with strong legs, you're more resilient and less prone to getting sidelined. So, whether you're charging into enemy territory or holding your ground against a raid, having strong legs in kabaddi is like having a secret weapon that helps you dominate the game [4].

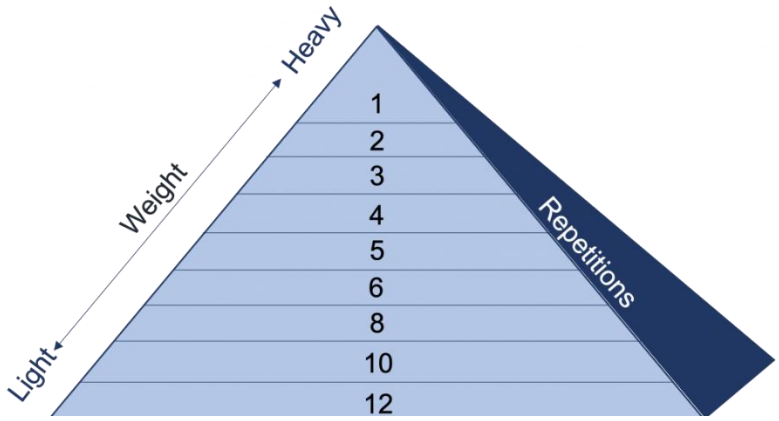


**Figure 1. Resistance traning system**

Along with varying the intensity of the weights utilized, figure 1 above shows different levels of repetitions over the many sets. The pyramid structure allows for both "up" and "down" movement.

***Weight Circuit Training:***

Weight circuit training is crucial for Kabaddi players to enhance their performance and excel in the game [5]. Kabaddi demands strength, agility, and endurance, and weight circuit training addresses these needs effectively. By incorporating exercises such as squats, lunges, deadlifts, and bench presses, players can build overall strength in their muscles, which is essential for executing powerful tackles, escapes, and maneuvers during matches [6]. Additionally, weight circuit training helps improve muscle endurance, allowing players to sustain their performance throughout the duration of a game without succumbing to fatigue. [7]This endurance is vital for Kabaddi players who engage in intense bouts of physical activity while constantly facing opponents' challenges.

The testing period lasted for twelve weeks. All forty-five patients underwent strength and endurance tests following the experimental treatment. The individuals' post-test scores were derived from these final test results. Evaluation of Covariance (ANCOVA) was used to analyze the pre-test and post-test scores in order to determine whether the average disparities were remarkable. Scheffe's post hoc experiment was employed if the value of the F from the modified test was determined to be significant. In each case, a strength threshold of 1.05 was established to test hypotheses [8].

Additionally, weight circuit training helps prevent injuries by strengthening muscles and ligaments, which lowers the likelihood of strains and sprains often seen in the sport.It also enhances players' speed and agility, enabling them to swiftly change directions and evade opponents' attempts to catch them [9]. Moreover, the mental aspect of weight circuit training cannot be overlooked, as it instills discipline, focus, and determination in players, qualities essential for success in Kabaddi. By regularly incorporating weight circuit training into their regimen, Kabaddi players can significantly enhance their physical abilities, thereby improving their performance on the court and contributing to their team's success [10].

## 2. LITERATURE REVIEW

Dhiman et al. [11] introduced Effect of resistance and circuit training in relation to flexibility of kabaddi players. The primary goal of this study was to investigate how resistance and circuit training affected kabaddi flexibility. One-way analysis of covariance was used to determine the impacts on the resistance training group and the circuit training group. One-way analysis of covariance was used to determine the impacts on the circuit training group and the resistance training group. The significance mean difference was examined at the 0.05 level using the least significant post hoc test.

Sundaram et al. [12] proposed Effects Of Yoga Practice With Low Volume Circuit Resistance Training And High Volume Resistance Training On Muscular Strength Endurance And Skill Performance Of Male Kabaddi Players. This study examined muscle strength, endurance, and skill performance characteristics during and after yoga practice using sparse sequence exercise in conjunction with high intensity resistance training. According to the study's findings, doing yoga combined with high-volume resistance training and regular movement uses a lot more energy than doing circuit resistance training with low volume and slow movement.

Baskaran et al. [13] designed Effect of resistance with SAQ training on leg strength and speed among college men kabaddi players. This study sought to ascertain the effects of Resistance with Speed, Agility, and Quickness (SAQ) training on male collegiate Kabaddi players' leg strength and speed. The findings showed that collegiate men's Kabaddi players' leg strength and speed significantly enhanced when resistance training was paired with rapidity, responsiveness, and quickness (SAQ)

training.

Manimaran et al. [14] introduced Effect Of High-Intensity Interval And Resistance Training On Agility And Vo2 Max Of Intercollegiate Men Kabaddi Players. Finding out the maximal oxygen consumption and flexibility of adult intercollegiate kabaddi players is the aim of this study. The physical attributes of agility, proper lung capacity, muscular coordination, mental clarity, and quick reactions are all incorporated into Kabaddi enjoyment. The study's findings indicated that the eight weeks of HIIT and RST significantly increased the intercollegiate men's kabaddi players' agility and Vo2 Max.

## 3. METHODOLOGY

The study's objective was to evaluate how weight circuit training affected men's kabaddi players' leg strength. To achieve this, thirty male Kabaddi players from SRM IST, Tamil Nadu, India, were selected as participants. After that, these athletes were split up into two comparable groups of fifteen.: group one underwent weight circuit training, while the other served as the control group. The subjects' pre-test results were derived from these initial test results. The corresponding designations of testing group I, research category II, and research category III were assigned to each group.

Game-specific activities were given to experimental group I, imagery training was given to experimental group II, and a combination of game-specific exercises and imagery training was given to experimental group III. The testing phase lasted for twelve weeks. Following the experimental therapy, strength endurance tests were administered to each of the 45 participants. The individuals' post-test scores were derived from these final test results. The findings from both tests were statistically examined using Analysis of Covariance (ANCOVA) to ascertain the imporatance of the mediun. Contemporary Views on Yoga and Sports Medicine to Improve Athletic Performance ISBN: 978-93-5300-491-0, page 265. Differences: Scheffe's post hoc test was applied in cases where the adjusted test's F-ratio was determined to be significant. A 0.25 level of strength was set for testing hypotheses in each instance.

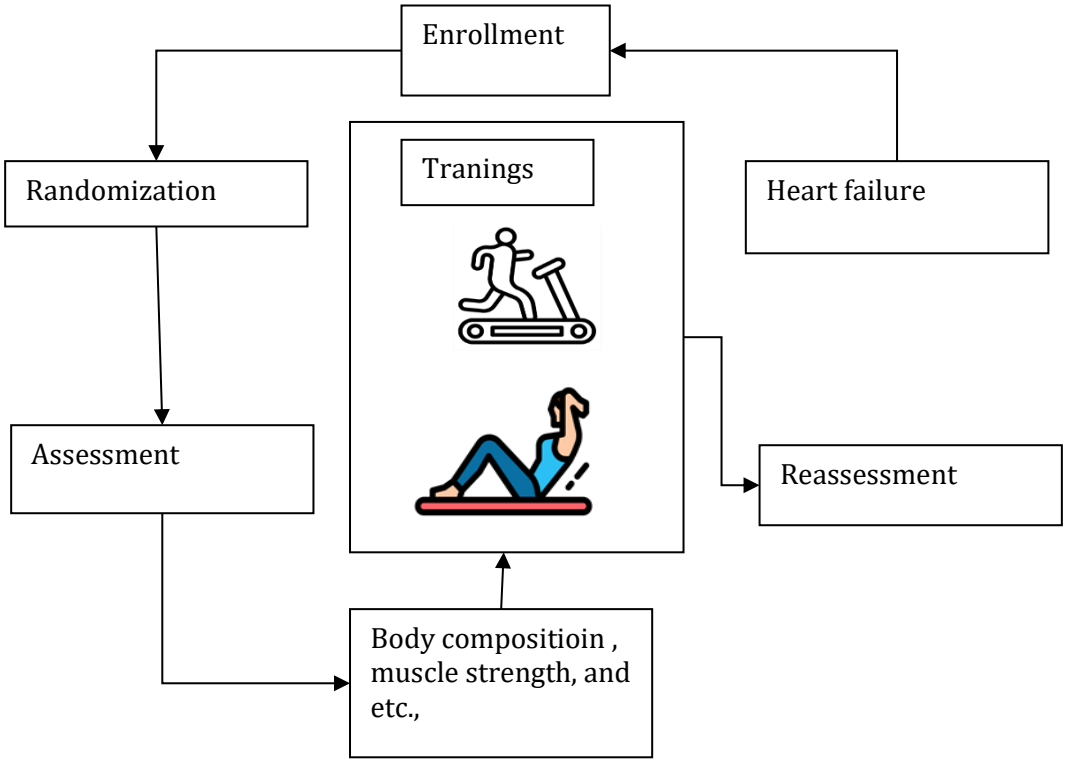


**Figure 1. Flow diagram of High intensity**

Figure 1 illustrates how high intensity exercises are being used in more beneficial ways. For twelve weeks, Group I engaged in the weight circuit training program three days a week, whereas Group II continued their usual physical literacy activities as part of their schooling without any specific training. A leg dynamometer was used to assess the force of the legs, which was selected as the primary variable. The chosen variable was assessed on both groups both prior to and right after the training session. To evaluate any significant differences between the groups, the analysis of covariance (ANCOVA) was applied. The 'F' ratio obtained through ANCOVA was tested for significance at the 0.05 level of confidence.

To gain a fundamental understanding of the data distribution, descriptive statistics like mean and standard deviation were discovered. To determine whether there are any statistically significant differences in the variables of each group, the "t" test

was used. Muscular strength endurance and skill performance in kabaddi techniques were tested for significance at a 0.25 level of strength.

## 4. ANALYSING DATA

The mathematical examination of the mean gains or decreases in the scores in the criteria parameters related to the components of endurance and skill performance is displayed in tables. Table I displays the findings of the analysis of covariance (ANCOVA) performed on the leg strength pre- and post-test scores for the weight circuit training group and the control group.

**TABLE 1: COVARIANCE ANALYSIS OF THE LEG STRENGTH DATA OF WEIGHT THE RING TRAINING AND MANAGEMENT GROUPS' PRE AND POST TESTS SCORE**

| **Test** | **Weight Circuit Training Group** | **Control Group** | **Source of Variance** | **Sum of Squares** | **df** | **Mean squares** | **Obtained 'F' Ratio** |
|---|---|---|---|---|---|---|---|
| **Pre Test** | | | | | | | |
| Mean | 90.47 | 89.50 | Between | 3.13 | 1 | 12.65 | 1.11 |
| S.D. | 2.05 | 1.34 | Within | 78.44 | 29 | 2.802 | |
| **Post Test** | | | | | | | |
| Mean | 84.63 | 82.123 | Between | 16.12 | 1 | 45.123 | 4.75* |
| S.D. | 1.98 | 1.04 | Within | 94.82 | 29 | 3.387 | |
| **Adjusted Post Test** | | | | | | | |
| Mean | 93.29 | 93.30 | Between | 18.49 | 1 | 18.49 | 4.30* |
| | | | Within | 116.03 | 28 | 4.298 | |

**importance at 0.25 level of strength.*

For credential of freedom 1 and 29, as well as 1 and 28, the table values required for significance at the 0.05 level of confidence are 4.21 and 4.216, respectively. This finding indicates that the experimental training on strength endurance caused a substantial difference in the means. Scheffe's post hoc test was used for post hoc examination of the data since significant differences were noted. The findings were displayed in table II.

**TABLE 2. STRENGHT ENDURANCE**

| **Adjusted Post- Test means** | | | **Mean difference** | **Confidence level** |
|---|---|---|---|---|
| **Weight circuit training group** | **Control group** | **Source of Variance** | | |
| 33.45 | 21.14 | ---------- | 1.78 | 1.17 |
| 31.54 | ---------- | 26.2 | 3.28 | |
| 23.42 | 21.14 | 26.2 | 5.06 | |
| --------- | 30.1 | 26.2 | 2.18 | |

The groups that participated in imagery training, game-specific activities, and a combination of game-specific exercises and

imagery training had post-test averages of 27.12, 63.56, and 23.56, respectively. Both the post-test and table F-ratios were 72.45 and 5.23, respectively. Therefore, for degrees of freedom 2 and 42, the post-test mediun F-proportion was important at the 0.25 level of strength. This suggests that there were notable variations in the participants' post-test means. The groups that participated in game-specific activities, imagery training, and a combination of game-specific exercises and imagery training had adjusted post-test averages of 22.92, 21.14, and 26.20, respectively.

Pursuant to the table, the heavier circuit exercise group's pre-test mean strength in the legs scores were 92.47 and 92.50, respectively. For the strength of the legs, the computed 'F' coefficient of 1.11 falls short of the given table value of 4.21 for df 1 and 29, which is required for significance at the 05 level of confidence. The mean leg strength scores of the heavy-duty circuit training group and the control group on the post-test were 94.63 and 92.53, respectively. Leg strength becomes important at the.05 level of confidence, as the resulting 'F' ratio of 4.75 for the post-test scores above corresponds to the table value of 4.21 for df 1 and 28.

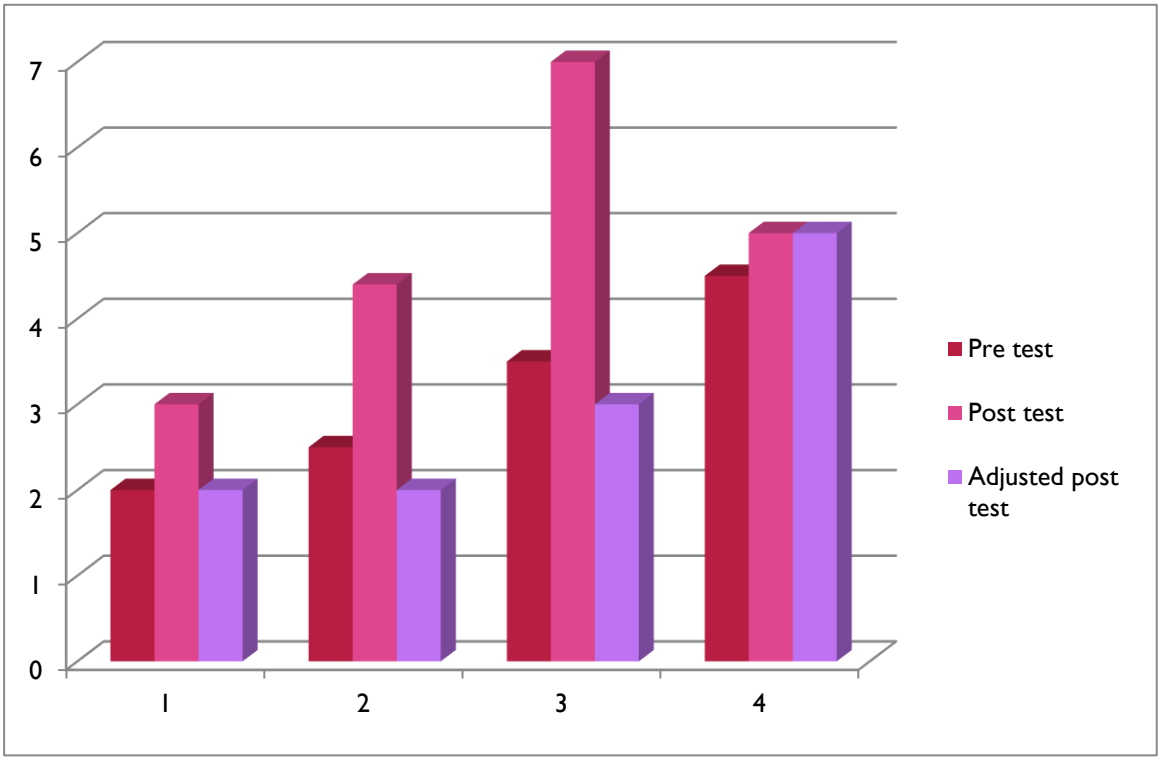


**Figure 2. Differences between the weight circuit training group, control group, and SD before, during, and after the test.**

Figure 2 above depicts The weight circuit training group's adjusted post-test mean was 94.14, while the control group's was 92.42. Leg strength is significant at the 0.05 level of confidence when the computed "F" ratio of 4.30 for the corrected post-test means is greater than the given table corresponding to 4.215 for df 1 and 28. The research's findings show that the adjusted post-test averages of the control group and the heavy circuit instruction group differed significantly in terms of leg endurance.

The offensive skills of the experimental group (YPG), the reduced-volume circuit strengthening group (YPLVCRTG), and the periodized high volume resistance training group (YPPHVRTG) increased significantly from before to after training: 2.34 points, 2.5a rate of 1. points, and 2.20 points, respectively.

The YPPHVRTG group performed much better than the YPLVCRTG, YPG, and control groups ($p<.05$). Furthermore, the YPLVRTG group performed significantly better than the YPG and control groups ($p<0.05$). The YPG group's defensive abilities were rated by judges as having a slight improvement and a significant edge over the control group.

## 5. CONCLUSIONS

According to our findings, a recent study's data indicated that both whole-body exercise training and high-intensity training were successful in boosting the kabaddi players' inspiratory muscle strength, with high-intensity training providing a quicker and more efficient option than endurance training for enhancing capacity and performance. To sum up, modifying post-test can be viewed as a potential approach to health promotion that can help combat the recent global suffering brought on by

non-communicable diseases.

Based on the study's findings, the following conclusions were made:

- Leg strength was shown to differ significantly between the control group and the weight circuit training group.Leg strength significantly increased as a result of weight circuit training.
- The mixture of game-specific and visual reinforcement category outperformed the game-specific workouts and representation fitness groups in terms of strength endurance, according to the data.

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