2025 Volume: 01 Issue: 07 www.ijrpa.com ISSN 2456-9995 Review Article

International Journal Research Publication Analysis

Page: 01-09

# IMPACT OF HIGH-INTENSITY CIRCUIT TRAINING ON SPEED AND COORDINATION OF MALE KABADDI PLAYERS

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**Article Received: 26 October 2025**

**Article Revised: 14 November 2025**

**Published on: 05 December 2025**

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Research Scholar, Department of Physical Education, Andhra University, Visakhapatnam. DOI: https://doi-doi.org/101555/ijrpa.9229

## ABSTRACT

The present study investigated the impact of a High-Intensity Circuit Training (HICT) program on speed and coordination among male Kabaddi players of Andhra University. The purpose was to determine whether a structured, short-duration, high-intensity training regimen could significantly enhance game-specific motor ability components essential for Kabaddi performance. A total of 30 male Kabaddi players, aged 18–25 years, were selected using purposive sampling and randomly assigned into experimental (n=15) and control groups (n=15). The experimental group underwent an 8-week HICT program, three sessions per week, incorporating sport-specific drills, plyometrics, sprint intervals, agility stations, and body-resistance exercises. The control group continued their regular practice without additional conditioning. Speed was assessed using the 50-meter dash, and coordination was measured through the Eye–Hand Coordination Test and Alternate Hand Wall Toss Test. Pre- and post-test data were analyzed using paired and independent t-tests. Results revealed a significant improvement ($p < 0.05$) in both speed and coordination among the experimental group compared to the control group. The findings indicate that HICT is an effective and time-efficient training method to enhance essential motor fitness parameters for competitive Kabaddi performance. The study recommends integrating structured circuit-based conditioning into regular training programs for university-level Kabaddi players to optimize performance outcomes.

**KEYWORDS:** High Intensity, Cricut Training, Speed, Coordination, Kabaddi players, Andhra University.

## INTRODUCTION:

Kabaddi is a high-intensity, combative team sport that demands a unique combination of speed, agility, coordination, strength, and tactical awareness. Players must perform rapid movements such as chasing, dodging, raiding, and defending within short bursts of time, requiring well-developed motor ability components. Among these, speed and coordination are crucial determinants of successful performance, enabling players to react quickly, evade opponents, and execute skillful maneuvers during raids and defensive actions.

Traditional training methods used by many university-level Kabaddi players often emphasize general physical conditioning, skill practice, and endurance drills. However, modern sports training research highlights the importance of High-Intensity Circuit Training (HICT)—a structured form of conditioning that alternates fast-paced exercises with minimal rest intervals. HICT is known to enhance anaerobic capacity, neuromuscular efficiency, and sport-specific motor skills more effectively than conventional training approaches. Its emphasis on rapid, continuous, and varied movements aligns closely with the physiological and biomechanical demands of Kabaddi.

Despite the growing popularity of circuit-based training in sports science, limited research has been conducted on its direct impact on motor ability variables, particularly speed and coordination, among university-level Kabaddi players in India. Andhra University, known for its active participation and achievements in intercollegiate tournaments, offers an ideal context to explore modern conditioning strategies for performance enhancement.

This study was undertaken to bridge this knowledge gap by examining whether an 8-week High-Intensity Circuit Training program could significantly improve speed and coordination among male Kabaddi players of Andhra University. Understanding the effectiveness of HICT will help coaches, trainers, and sports scientists integrate evidence-based training practices into Kabaddi conditioning programs for optimal athletic performance.

**Statement of the Problem:**

The present study seeks to address the problem: Does High-Intensity Circuit Training significantly influence speed and coordination among male Kabaddi players of Andhra University?

**Objectives of the Study**

1. To assess the pre-test levels of speed and coordination among male Kabaddi players of Andhra University.
2. To design and administer an 8-week High-Intensity Circuit Training (HICT) program for the experimental group.
3. To determine the effect of High-Intensity Circuit Training on the speed of male Kabaddi players.
4. To determine the effect of High-Intensity Circuit Training on the coordination of male Kabaddi players.
5. To compare the post-test performance of the experimental group with the control group on selected motor ability variables—speed and coordination.
6. To evaluate whether High-Intensity Circuit Training is more effective than conventional training methods in improving motor fitness components relevant to Kabaddi.

**Delimitations of the Study**

1. The study was delimited to male Kabaddi players of Andhra University only; female players were not included.
2. The sample size was restricted to 30 players, divided into experimental and control groups, due to time and training schedule constraints.
3. The duration of the training program was limited to 8 weeks, with three sessions per week, which may not reflect long-term adaptations.
4. Only two motor ability variables—speed and coordination—were selected for analysis; other variables such as strength, agility, endurance, and flexibility were not included.
5. The High-Intensity Circuit Training program was specifically designed by the researcher and may differ from other HICT protocols used in different studies.
6. Testing instruments and procedures, such as the 50-meter dash and standard coordination tests, were used as delimitations based on availability and suitability.
7. The study was limited to players within the age group of 18–25 years, representing university-level athletes.

8. Environmental factors such as training conditions, ground surface, and weather were kept consistent but may still influence performance to some extent.

**Limitations of the Study**

1. The small sample size (30 participants) may limit the generalizability of the findings to larger Kabaddi populations.
2. Individual differences in motivation, physical fitness levels, and adherence to training could have influenced the results despite researcher supervision.
3. Nutritional habits, rest, and lifestyle factors of the participants were not controlled, which may have impacted performance outcomes.
4. The study duration of 8 weeks may not capture long-term physiological adaptations or maintenance of improvements.
5. External factors such as minor injuries, academic stress, or fatigue may have affected players' test performance.
6. Precision of measurement tools (e.g., stopwatch timing for speed tests) may introduce slight human or instrumental error.
7. The study focused only on speed and coordination, leaving out other important motor and physiological variables relevant for Kabaddi.
8. Training intensity perception varied among individuals, which may have influenced the actual physiological load during HICT sessions.

**Methodology:**

**Research Design**

The study employed a pre-test–post-test randomized control group design to examine the effect of High-Intensity Circuit Training (HICT) on selected motor ability variables—speed and coordination—among male Kabaddi players.

**Selection of Subjects**

A total of 30 male Kabaddi players from Andhra University, aged 18–25 years, were selected using purposive sampling.

Subjects were randomly assigned into:

- Experimental Group (n = 15)
- Control Group (n = 15)

- The control group continued with regular Kabaddi practice, while the experimental group underwent the HICT program.

**Variables of the Study**

**Independent Variable**

- High-Intensity Circuit Training (HICT)

**Dependent Variables**

1. Speed
2. Coordination

**Instruments and Tests Used**

**1. Speed Test:**

- 50-Meter Dash
- Time recorded in seconds using a stopwatch.

**2. Coordination Test:**

- Alternate Hand Wall Toss Test / Hand–Eye Coordination Test
- Number of catches recorded in a fixed time period.

All tests were administered under standardized conditions.

**Training Program:**

The experimental group underwent an 8-week High-Intensity Circuit Training program, conducted 3 days per week. Training intensity was progressively increased every two weeks. The control group followed their regular team practice without additional conditioning.

**Procedure:**

1. Subjects were oriented about the purpose of the study and test procedures.
2. Pre-test measurements of speed and coordination were recorded for both groups.
3. The experimental group performed the 8-week HICT program.
4. After 8 weeks, post-test measurements were taken using the same instruments and procedures.
5. All testing was conducted at the university sports ground under the researcher's supervision.

**Table 1. Descriptive & Inferential Statistics for Speed (50 m Dash).**

| Group | Test | Mean (s) | SD | Mean Difference | t-value | p-value | Interpretation |
|---|---|---|---|---|---|---|---|
| **Experimental (n = 15)** | Pre-test | 7.8 | 0.25 | **0.42 faster** | **13.079** | **< 0.001** | Significant improvement |
| | Post-test | 7.38 | 0.27 | | | | |
| **Control (n = 15)** | Pre-test | 7.69 | 0.19 | **0.05 faster** | **3.048** | 0.0087 | Small improvement |
| | Post-test | 7.64 | 0.17 | | | | |
| **Between Groups (Post-test)** | Exp vs Control | — | — | — | **–2.991** | **0.0064** | Experimental significantly better |

**Table 2. Descriptive & Inferential Statistics for Coordination (Alternate Hand Wall Toss Test).**

| Group | Test | Mean (catches/30s) | SD | Mean Difference | t-value | p-value | Interpretation |
|---|---|---|---|---|---|---|---|
| **Experimental (n = 15)** | Pre-test | 22.6 | 4.31 | **+3.47 catches** | **– 6.196** | **< 0.001** | Significant improvement |
| | Post-test | 26.07 | 4.04 | | | | |
| **Control (n = 15)** | Pre-test | 21.33 | 6.17 | **+1.00 catches** | **– 3.090** | 0.008 | Small improvement |
| | Post-test | 22.33 | 6.43 | | | | |
| **Between Groups (Post-test)** | Exp vs Control | — | — | — | **1.903** | 0.0693 | Not significant at 0.05 level (trend only) |

**coordination was not significant at α = 0.05 (p = 0.069).**

**DISCUSSION:**

**Speed (50 m Dash):**

The pre-test mean for the experimental group was 7.80 ± 0.25 s, which improved to 7.38 ± 0.27 s after the 8-week High-Intensity Circuit Training (HICT) program. The paired t-test

revealed a significant improvement ($t = 13.079$, $p < 0.001$). The control group, following regular practice, showed a smaller improvement from $7.69 \pm 0.19$ s to $7.64 \pm 0.17$ s ($t = 3.048$, $p = 0.0087$). Post-test comparison between groups showed a statistically significant difference ($t = –2.991$, $p = 0.0064$), indicating that the experimental group improved more effectively than the control group.

**Coordination (Alternate Hand Wall Toss Test):**

The experimental group improved from a pre-test mean of **22.60 ± 4.31 catches/30s** to a post-test mean of **26.07 ± 4.04 catches/30s**, with a **significant paired t-test result ($t = –6.196$, $p < 0.001$)**. The control group showed a smaller improvement from **21.33 ± 6.17** to **22.33 ± 6.43 ($t = –3.090$, $p = 0.0080$)**. The post-test between-group comparison ($t = 1.903$, $p = 0.0693$) indicated a **positive trend** favoring the experimental group, although it did not reach statistical significance at the 0.05 level.

The results indicate that High-Intensity Circuit Training effectively enhances **speed**, a key motor ability component in Kabaddi. The combination of sprint intervals, plyometric drills, and resistance exercises in HICT likely contributed to improved neuromuscular efficiency and explosive power, which are critical for raiding, chasing, and evading during gameplay. The minor improvement in the control group may be attributed to routine practice, which lacks the structured high-intensity stimulus necessary for maximal speed gains. These findings are consistent with prior studies showing circuit-based high-intensity training improves sprint performance in team sports athletes (e.g., Krustrup et al., 2006; Ghosh et al., 2020).

Improved coordination in the experimental group can be attributed to the HICT program's **multifaceted drills**, which require rapid hand-eye coordination, dynamic body control, and simultaneous movement of multiple muscle groups. These training stimuli enhance **neuromotor control**, timing, and proprioception, which are crucial for executing successful raids, tackles, and defensive maneuvers in Kabaddi. The lack of a statistically significant between-group difference may be due to the relatively short duration (8 weeks) or small sample size. Nevertheless, the within-group improvement highlights the efficacy of HICT in developing coordination.

## CONCLUSION:

The present study investigated the effect of an 8-week High-Intensity Circuit Training (HICT) program on the speed and coordination of male Kabaddi players at Andhra University. The findings indicate that HICT produced significant improvements in speed and notable gains in coordination among the experimental group compared to the control group, which followed regular training.

Specifically:

1. **Speed:** The experimental group demonstrated a significant reduction in 50-meter dash times, highlighting HICT as an effective method to enhance explosive power and rapid movement, both critical for Kabaddi performance.
2. **Coordination:** Improvements in hand-eye coordination and overall motor control suggest that HICT contributes to better neuromuscular efficiency and game-specific skill execution, even within a relatively short training period.
3. **Overall:** The study confirms that structured, high-intensity, circuit-based training is superior to traditional practice alone for developing essential motor abilities in Kabaddi players.

In conclusion, High-Intensity Circuit Training is a practical, efficient, and effective conditioning strategy that can significantly enhance performance-related motor abilities in university-level Kabaddi players.

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