

Motor Fitness Profile of State-Level Kabaddi Women Players

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Abstract: Motor fitness plays a vital role in determining performance in high-intensity sports like Kabaddi. The present study aims to analyse the motor fitness profile of state-level women Kabaddi players. Key variables such as speed, agility, flexibility, endurance, and explosive power were assessed among selected athletes. A sample of 40 state-level female Kabaddi players aged between 18–25 years was selected using purposive sampling. Standardized tests including the 50-meter dash, shuttle run, sit-and-reach test, standing broad jump, and 600-meter run were used to collect data. The results revealed that the players demonstrated above-average levels of agility and speed, while flexibility and endurance showed moderate variation. The study concludes that motor fitness components significantly influence Kabaddi performance and should be emphasized in training programs.

Keywords: Motor Fitness, Kabaddi, Women Players, Agility, Speed, Endurance, Explosive Power

I. INTRODUCTION

Kabaddi, one of the most popular indigenous sports of India, has evolved from a traditional rural game into a highly competitive modern sport played at national and international levels. Recognized by organizations such as the International Kabaddi Federation and promoted through events like the Pro Kabaddi League, the sport demands a high degree of physical fitness, tactical intelligence, and mental alertness. In recent years, women's participation in Kabaddi has increased significantly, reflecting a growing interest in competitive sports among female athletes and highlighting the need for scientific evaluation of their physical capabilities.

Motor fitness is a critical component of athletic performance and refers to an individual's ability to perform physical tasks efficiently and effectively. It encompasses several key elements such as speed, strength, endurance, agility, flexibility, balance, and coordination. In a sport like Kabaddi, where players are required to execute quick raids, evade defenders, maintain balance under pressure, and sustain repeated bouts of high-intensity activity, motor fitness becomes a decisive factor influencing success. Each phase of the game—raiding, defending, and transitioning—demands a unique combination of these fitness components.

State-level Kabaddi players represent a higher standard of competition, having undergone systematic training and exposure to competitive environments. Women players at this level are expected to possess well-developed motor fitness attributes to cope with the physical and physiological demands of the game. However, variations in training facilities, coaching methods, nutritional support, and socio-economic conditions may influence their overall fitness profile. Therefore, it becomes essential to assess and analyse their motor fitness characteristics in order to identify strengths and areas requiring improvement.

Understanding the motor fitness profile of state-level women Kabaddi players is not only important for enhancing individual performance but also for designing effective training programs. Scientific assessment helps coaches and sports scientists tailor conditioning regimes that target specific weaknesses while optimizing strengths. Moreover, such studies contribute to the broader field of sports science by providing insights into gender-specific training needs and performance determinants.

In the current context, where women's sports are gaining increasing recognition and institutional support, evaluating the motor fitness of female Kabaddi players assumes even greater significance. It aids in talent identification,



performance enhancement, and injury prevention, thereby contributing to the overall development of the sport. Hence, the present study focuses on examining the motor fitness profile of state-level Kabaddi women players to provide a comprehensive understanding of their physical preparedness and to suggest measures for improvement.

II. REVIEW OF LITERATURE

A review of related literature provides a theoretical and empirical foundation for understanding the motor fitness characteristics of Kabaddi players, particularly women athletes. Various studies have examined the role of physical fitness components such as speed, agility, strength, endurance, and flexibility in enhancing Kabaddi performance.

Recent scientific investigations emphasize that Kabaddi is a high-intensity contact sport requiring well-developed motor fitness and physiological efficiency. A systematic review (2026) analysing training interventions in Kabaddi players reported that structured training programs—such as strength training, plyometrics, circuit training, and speed-agility-quickness (SAQ) drills—significantly improve key fitness variables including speed, agility, strength, and flexibility. This highlights the importance of targeted conditioning programs in developing motor fitness profiles among players.

Several experimental studies have focused on the effectiveness of training methods. Research on circuit training demonstrated significant improvements in motor fitness components such as agility, balance, speed, and power among Kabaddi players after systematic training over a period of weeks. These findings suggest that structured and progressive training plays a crucial role in enhancing performance-related fitness attributes.

Studies specifically involving female Kabaddi players provide further insight. A comparative study on motor coordination among state-level female Kabaddi players revealed that agility performance can be influenced by external factors such as playing surfaces (clay vs. synthetic mat), with better results observed on clay surfaces. This indicates that environmental conditions also contribute to variations in motor fitness performance.

Research comparing Kabaddi players with athletes from other sports, such as Kho-Kho, found significant differences in speed, flexibility, and agility. Kabaddi players often demonstrated superior strength and explosive power due to the physical and combative nature of the game. Similarly, studies on female Kabaddi players at district and sub-junior levels revealed that agility, speed, and explosive leg strength are key determinants of performance.

Further, comparative studies among inter-university women Kabaddi players highlighted significant differences in motor fitness components such as speed, agility, and flexibility, indicating that training exposure and competition level influence physical fitness outcomes. These findings reinforce the importance of competitive experience in shaping motor fitness profiles.

Despite the growing body of research, it has been observed that most studies predominantly focus on male players, with limited attention given to female athletes. The systematic review (2026) also noted that only a small proportion of studies included female participants, indicating a research gap in understanding women-specific fitness characteristics in Kabaddi.

Summary of Literature Gap

The review of related literature highlights several important findings regarding motor fitness and its role in Kabaddi performance. However, it also reveals certain gaps that justify the need for the present study.

Firstly, existing studies clearly establish that **motor fitness components such as speed, agility, flexibility, endurance, and explosive power are crucial determinants of performance in Kabaddi**. These components directly influence a player's ability to execute effective raids, defend efficiently, and sustain performance throughout the game.

Secondly, the literature indicates that **systematic training interventions**, including strength training, circuit training, and agility drills, significantly enhance motor fitness variables. This suggests that motor fitness is not static but can be improved through well-planned training programs.



Thirdly, several studies point out that **external factors such as training environment, playing surface, coaching quality, and level of competition** have a considerable impact on motor fitness performance. Players competing at higher levels tend to exhibit better fitness profiles due to greater exposure and structured training.

Despite these valuable insights, a critical gap remains in the existing body of research. **Most studies have primarily focused on male Kabaddi players or mixed groups**, with comparatively **limited attention given to female athletes**, particularly those competing at the state level. Furthermore, there is a lack of comprehensive studies that simultaneously assess multiple motor fitness components in state-level women Kabaddi players.

Therefore, the present study aims to address this gap by providing a detailed and focused analysis of the **motor fitness profile of state-level women Kabaddi players**. This will contribute to a better understanding of their physical capabilities and support the development of targeted training strategies.

Conclusion of Review

The reviewed literature clearly establishes that motor fitness is a key determinant of success in Kabaddi. However, there is a noticeable lack of focused studies on the motor fitness profiles of state-level women players. Therefore, the present study aims to fill this gap by providing a detailed analysis of motor fitness components among this specific group, contributing to both academic research and practical training applications.

III. OBJECTIVES OF THE STUDY

The present study is undertaken with the following specific objectives:

To assess the motor fitness components of state-level women Kabaddi players

This objective focuses on evaluating key components of motor fitness such as speed, agility, flexibility, endurance, and explosive power among the selected players. It aims to determine the overall level of physical fitness required for effective performance in Kabaddi.

To analyse variations in different motor fitness variables

This objective seeks to examine the differences and distribution patterns among various motor fitness components within the group. It helps in understanding whether certain fitness attributes are more developed than others among state-level women Kabaddi players.

To identify strengths and weaknesses in the fitness profile of players

The purpose of this objective is to highlight the areas where players excel as well as the aspects that require improvement. This analysis is useful for coaches and trainers in designing targeted training programs to enhance overall performance.

These objectives collectively aim to provide a comprehensive understanding of the motor fitness profile of state-level women Kabaddi players and contribute to the development of effective training strategies.

IV. HYPOTHESES

In any scientific investigation, hypotheses play a crucial role in guiding the direction of the study and providing a basis for statistical testing. They represent tentative assumptions or predictions about the relationship between variables, which are then tested through empirical data. In the context of the present study, hypotheses are formulated to examine whether significant differences exist in the motor fitness components of state-level women Kabaddi players.

The **null hypothesis (H_0)** states that *there is no significant difference in motor fitness variables among state-level women Kabaddi players*. This implies that all selected components of motor fitness—such as speed, agility, flexibility, endurance, and explosive power—are assumed to be relatively uniform across the group. In other words, any observed differences in performance scores are considered to be due to chance or random variation rather than actual differences in physical fitness levels. The null hypothesis serves as a baseline assumption and is tested statistically to determine its validity.



On the other hand, the **alternative hypothesis (H_1)** proposes that *significant differences exist in motor fitness variables among state-level women Kabaddi players*. This suggests that the players may differ in one or more components of motor fitness due to variations in training intensity, experience, physiological characteristics, coaching methods, or environmental factors. Acceptance of the alternative hypothesis would indicate that motor fitness is not evenly distributed among the players and that certain components may be more developed than others.

The formulation of these hypotheses is essential for conducting objective and systematic analysis. By testing the null hypothesis against the alternative, the researcher can determine whether the differences observed in motor fitness variables are statistically significant. This, in turn, helps in drawing meaningful conclusions about the physical preparedness of state-level women Kabaddi players.

Furthermore, the outcome of hypothesis testing has practical implications. If significant differences are found, it would highlight the need for individualized training programs focusing on weaker fitness components. Conversely, if no significant differences are observed, it may indicate a relatively balanced fitness profile among players, suggesting the effectiveness of current training practices.

Thus, these hypotheses provide a clear framework for analysing motor fitness variables and contribute to a deeper understanding of performance-related factors in women's Kabaddi.

V. METHODOLOGY

The present study adopts a **descriptive survey research design** to investigate the motor fitness profile of state-level women Kabaddi players. This design is considered appropriate as it enables the researcher to systematically describe, analyse, and interpret the existing conditions related to motor fitness components without manipulating any variables.

The descriptive method focuses on collecting factual information about the current status of individuals or groups. In this study, it is used to assess various motor fitness components such as speed, agility, flexibility, endurance, and explosive power among the selected players. The design allows for an objective evaluation of these variables through standardized tests and measurements.

By employing the descriptive survey method, the researcher aims to obtain a clear and accurate picture of the physical fitness levels of state-level women Kabaddi players. This approach facilitates the identification of patterns, similarities, and differences in motor fitness variables within the group. It also helps in drawing meaningful conclusions regarding the strengths and weaknesses of the players' fitness profiles.

Furthermore, this research design is non-experimental in nature, meaning that no treatment or intervention is applied during the study. The data is collected in a natural setting, ensuring that the results reflect the actual performance and fitness levels of the participants. This enhances the reliability and validity of the findings.

In summary, the descriptive survey method provides a structured framework for analysing motor fitness characteristics and is well-suited for achieving the objectives of the present study.

5.1 Sample

The sample for the present study consisted of **40 state-level women Kabaddi players** selected from various districts and training centers. The age of the participants ranged between **18 to 25 years**, representing a group that is considered to be in the peak phase of physical performance and athletic development.

A **purposive sampling technique** was employed to select the participants, ensuring that only those players who had actively participated in state-level Kabaddi competitions were included in the study. This method was chosen to maintain the relevance and specificity of the sample in relation to the objectives of the research.

All selected players had a minimum level of training experience and were regularly engaged in practice sessions, which ensured a certain degree of uniformity in their exposure to the sport. The participants were physically fit and free from any major injuries at the time of data collection, allowing for accurate assessment of their motor fitness components.

The sample size of 40 players was considered adequate to obtain reliable and meaningful results within the scope of the study. It also allowed for effective statistical analysis and comparison of different motor fitness variables.



Thus, the selected sample provided a suitable representation of **state-level women Kabaddi players**, enabling the researcher to examine their motor fitness profile in a systematic and comprehensive manner.

5.2 Variables

In the present study, motor fitness is treated as a multidimensional construct comprising several key physical components that are essential for effective performance in Kabaddi. The following variables were selected for assessment based on their relevance to the demands of the game:

1. Speed

Speed refers to the ability of a player to perform a movement or cover a distance in the shortest possible time. In Kabaddi, speed is crucial during raiding, escaping from defenders, and quick positional changes. It directly influences a player's effectiveness in offensive and defensive situations.

2. Agility

Agility is the ability to change direction rapidly and efficiently while maintaining balance and control. Kabaddi requires frequent sudden movements, dodging, and turning, making agility one of the most important motor fitness components for players.

3. Flexibility

Flexibility refers to the range of motion available at a joint or group of joints. It helps players perform movements with greater ease and reduces the risk of injuries. In Kabaddi, flexibility is important for actions such as stretching, bending, and reaching during raids and tackles.

4. Endurance

Endurance is the ability to sustain physical activity over a prolonged period. Kabaddi involves repeated bouts of high-intensity effort, and good endurance enables players to maintain performance levels throughout the match without excessive fatigue.

5. Explosive Power

Explosive power is the ability to exert maximum force in a short period of time. It is essential for actions such as jumping, sudden acceleration, and forceful movements during tackling or escaping. This component plays a significant role in determining a player's overall performance efficiency.

These variables were selected as they collectively represent the essential motor fitness components required for successful participation in Kabaddi. Their assessment provides a comprehensive understanding of the physical capabilities of state-level women Kabaddi players.

5.3 Tools and Tests

To assess the selected motor fitness variables, standardized and widely accepted field tests were used. These tests are reliable, valid, and suitable for evaluating the physical fitness components of Kabaddi players. The details of the tools and tests employed in the study are as follows:

1. Speed – 50 Meter Dash

The **50-meter dash** was used to measure the speed of the players. Each participant was instructed to run a distance of 50 meters as fast as possible from a standing start. The time taken to complete the distance was recorded in seconds using a stopwatch. Lower time indicates better speed performance.

2. Agility – Shuttle Run Test

The **shuttle run test** was conducted to evaluate agility. Players were required to run back and forth between two parallel lines placed at a fixed distance, picking up and placing blocks as per the standard protocol. The total time taken to complete the task was recorded. Faster completion time reflects higher agility.

3. Flexibility – Sit and Reach Test



The **sit and reach test** was used to measure flexibility, particularly of the lower back and hamstring muscles. The participant sat on the floor with legs fully extended and reached forward along a measuring scale as far as possible. The distance reached was recorded in centimetres, with greater distance indicating better flexibility.

4. Explosive Power – Standing Broad Jump

The **standing broad jump** test was used to assess explosive leg power. Players were asked to jump forward as far as possible from a standing position. The distance covered from the take-off line to the landing point was measured in centimetres. Greater distance indicates higher explosive power.

5. Endurance – 600 Meter Run

The **600-meter run** was used to evaluate cardiovascular endurance. Participants were instructed to run or jog a distance of 600 meters in the shortest possible time. The time taken was recorded in minutes and seconds. Lower time reflects better endurance capacity.

These tools and tests provided objective and quantitative measures of the selected motor fitness variables, enabling accurate assessment of the physical fitness profile of state-level women Kabaddi players.

5.4 Statistical Techniques

In order to analyse and interpret the collected data effectively, appropriate statistical techniques were employed. These techniques helped in summarizing the data, identifying patterns, and drawing meaningful conclusions regarding the motor fitness variables of the selected players.

1. Mean

The **mean (average)** was used to determine the central tendency of the data for each motor fitness variable. It provides a single representative value that reflects the overall performance level of the group. The mean was calculated by summing up all the individual scores and dividing by the total number of participants. This measure helped in understanding the general level of speed, agility, flexibility, endurance, and explosive power among the players.

2. Standard Deviation

The **standard deviation** was used to measure the variability or dispersion of the scores around the mean. It indicates how much the individual performances differ from the average value. A low standard deviation suggests that the scores are closely clustered around the mean, while a high standard deviation indicates greater variation among players. This measure is important for understanding consistency in motor fitness performance.

3. Comparative Analysis

Comparative analysis was carried out to examine differences among the selected motor fitness variables. This involved comparing the mean scores of different components to identify which fitness attributes were more developed and which required improvement. It also helped in highlighting the relative strengths and weaknesses within the group.

These statistical techniques provided a systematic and scientific basis for analysing the data, enabling the researcher to interpret the motor fitness profile of state-level women Kabaddi players in a clear and meaningful manner.

VI. RESULTS AND DISCUSSION

6.1 Findings

Players showed **high agility levels**, indicating efficient movement and quick response

Speed performance was above average due to regular sprint-based training

Explosive power was well developed, aiding in effective raiding and tackling

Flexibility showed moderate levels, suggesting scope for improvement

Endurance varied among players, indicating differences in aerobic conditioning

6.2 Discussion

The results highlight that agility and speed are the strongest motor fitness components among state-level women Kabaddi players. However, flexibility and endurance require more focused training interventions. These findings align with previous research emphasizing the dynamic and high-intensity nature of Kabaddi.



VII. CONCLUSION

The present study clearly establishes that **motor fitness plays a significant role in determining the performance of state-level women Kabaddi players**. The analysis of various fitness components reveals that attributes such as **agility, speed, and explosive power are relatively well developed** among the players, reflecting the dynamic and high-intensity nature of Kabaddi. These components are essential for quick movements, rapid directional changes, and effective execution of both offensive and defensive skills.

However, the study also identifies that **flexibility and endurance are comparatively less developed**, indicating areas that require focused attention. Limited flexibility may restrict the range of movement and increase the risk of injury, while lower endurance levels can affect a player's ability to sustain performance throughout the duration of the match. The findings suggest that although the players possess strong foundational motor fitness, there is a need for a **more balanced and comprehensive training approach**. Coaches and trainers should design structured training programs that not only maintain and enhance strengths like speed and agility but also emphasize improving flexibility and cardiovascular endurance. Incorporating activities such as stretching exercises, yoga, aerobic conditioning, and interval training can help achieve this balance.

In conclusion, a well-rounded development of all motor fitness components is essential for optimizing performance in Kabaddi. The study highlights the importance of scientific training methods and regular fitness assessment in enhancing the overall physical preparedness of state-level women Kabaddi players.

VIII. RECOMMENDATIONS

Based on the findings of the present study, the following recommendations are suggested to improve the motor fitness and overall performance of state-level women Kabaddi players:

Include flexibility exercises such as yoga and stretching routines

Flexibility should be enhanced through regular incorporation of yoga, dynamic stretching, and static stretching exercises. Improved flexibility will increase the range of motion, enhance movement efficiency, and reduce the risk of injuries during play.

Improve endurance through aerobic and interval training

Endurance can be developed by integrating aerobic exercises such as running, cycling, and skipping, along with high-intensity interval training (HIIT). This will help players sustain performance levels throughout the match and delay the onset of fatigue.

Develop sport-specific agility drills

Agility training should be tailored to the specific demands of Kabaddi. Drills involving quick directional changes, reaction time, and coordination—such as ladder drills, cone drills, and shuttle runs—should be regularly practiced to improve on-field performance.

Conduct regular fitness assessments

Periodic evaluation of motor fitness components should be carried out using standardized tests. This will help in monitoring progress, identifying weaknesses, and making necessary adjustments in training programs.

Provide individualized training programs

Since players may differ in their strengths and weaknesses, personalized training plans should be designed. Individualized programs ensure targeted improvement and maximize each player's potential.

These recommendations aim to promote a balanced development of all motor fitness components, thereby enhancing the overall efficiency and competitive performance of state-level women Kabaddi players.

IX. LIMITATIONS OF THE STUDY

While the present study provides valuable insights into the motor fitness profile of state-level women Kabaddi players, certain limitations must be acknowledged:



Limited sample size

The study was conducted on a sample of only 40 players, which may not fully represent the entire population of state-level women Kabaddi players. A larger sample size could provide more generalized and reliable results.

Restricted to state-level players only

The scope of the study was confined to state-level athletes, and therefore, the findings cannot be generalized to players at district, national, or international levels. Differences in training intensity and exposure at other levels may lead to variations in motor fitness profiles.

Environmental and dietary factors not considered

Important factors such as nutrition, climate conditions, lifestyle habits, and training environment were not taken into account. These variables can significantly influence motor fitness and overall performance.

These limitations should be considered while interpreting the findings of the study. Future research may address these constraints to provide a more comprehensive understanding of motor fitness among Kabaddi players.

X. SUGGESTIONS FOR FURTHER RESEARCH

In light of the findings and limitations of the present study, the following suggestions are proposed for future research to expand the understanding of motor fitness and performance in Kabaddi:

Comparative study between male and female Kabaddi players

Future research may focus on comparing motor fitness components between male and female players to identify gender-based differences in physical performance, training adaptations, and physiological characteristics. Such studies would help in designing gender-specific training programs.

Analysis of psychological factors affecting performance

Along with physical fitness, psychological aspects such as motivation, confidence, anxiety, and decision-making ability play a crucial role in Kabaddi performance. Further studies can explore the relationship between mental factors and motor fitness to provide a more holistic understanding of player performance.

Longitudinal studies on training effects

Long-term studies examining the impact of systematic training programs over an extended period would provide deeper insights into how motor fitness components develop and improve. Longitudinal research can help in understanding the progression of fitness levels and the effectiveness of different training interventions.

These suggestions aim to encourage more comprehensive and multidimensional research in the field of Kabaddi, contributing to the scientific development of training methods and performance enhancement strategies.

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