Analysis of Body Posture Profiles of Raider and Defender Athletes in Kabaddi

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Abstract. Kabaddi is a team sport characterised by high physical contact and requires optimal physical, mental, and biomechanical abilities from athletes. Each playing position in Kabaddi has different demands, particularly between raiders, who attack, and defenders, who defend. These role differences require specific body posture characteristics to enable athletes to perform optimally on the field. This study aims to analyse and comprehensively describe the body posture profiles of raider and defender athletes in Aceh Kabaddi as a basis for athlete development and selection. This research employed a quantitative, descriptive approach. The subjects consisted of 23 Aceh Kabaddi athletes, including 12 raiders and 11 defenders. Data were collected through anthropometric measurements, including body height, body weight, sitting Height, arm span, and biacromial breadth. Measurements were conducted using standard anthropometric instruments and supported by visual analysis using Kinovea software to enhance the accuracy of posture observation. The collected data were analysed using descriptive statistics to obtain an overview of the physical characteristics of each playing position. The results indicated apparent differences in body posture profiles between raider and defender athletes. Raiders had an average height of 162.45 cm and a body weight of 55.86 kg, reflecting a relatively light and proportionate body posture that supports speed, agility, and attacking manoeuvrability.

Meanwhile, defenders had an average height of 161.31 cm and body weight of 66.05 kg, with greater shoulder width and body mass, which support strength, stability, and effectiveness in defence and tackling. This study concludes that differences in body posture profiles are correlated with the role demands and functions of athletes based on their playing positions in Kabaddi. These findings emphasise the importance of anthropometric analysis as a scientific basis for athlete selection, training program planning, and sustainable development of Kabaddi performance.

Keywords: Body Posture; Anthropometry; Raider; Defender; Kabaddi.

INTRODUCTION

Kabaddi is a team sport originating from India that has developed globally and is contested in various international events, including the Asian Games. This sport has distinctive characteristics that set it apart from other team sports, namely the combination of intense physical contact, speed, agility, strength, endurance, and high levels of tactical and mental ability. In Kabaddi, athletes must make rapid decisions under physical pressure and limited time, making physical readiness and body composition crucial determinants of performance. At a glance, Kabaddi resembles the Indonesian traditional game Gobak Sodor. However, Kabaddi incorporates elements similar to rugby through team-based play, where each player plays a vital role in both attack and defence. In addition, the sport involves intense physical contact similar to wrestling, where players must either restrain opponents or escape their grips, a defining characteristic of Kabaddi.

Kabaddi is played by two teams that take turns attacking to score points. The game is played on a court measuring 10 × 13 meters for men and 8 ×

12 meters for women, divided by a centre line (midline). A match consists of two halves, each lasting 20 minutes, with a five-minute break between halves. The essence of the game is to score points by entering the opponent's area and touching as many defending players as possible without being caught. The attacking player, known as the raider, repeatedly chants the word "Kabaddi, Kabaddi, Kabaddi" while entering the opponent's territory and attempts to touch the nearest opponent. In contrast, seven opposing players prepare to capture the raider.

The Kabaddi competition format is one attacker against seven defenders, commonly known as National Style Kabaddi. According to authors [1], *"Kabaddi as a sport demands agility, good lung capacity, muscular coordination, mental composure, and quick responses."* Excellent physical condition is essential for a raider to perform fast, explosive manoeuvres, avoid opponents' blocks and tackles, and successfully score points for the team. In addition to physical ability, ideal body posture is also an important factor influencing a raider's performance in penetrating the opponent's defensive line. Body height, for instance, provides a distinct advantage for a raider.

According to authors [2], "Height in Kabaddi provides a particular advantage for athletes, as when a raider attacks a defender, the raider can position themselves more effectively." Proper body posture allows a raider to reach greater distances, facilitates scoring points, and makes it more difficult for opponents to defend. Furthermore, agility and the ability to change direction rapidly are also crucial in this team sport. As stated by authors [3], "Team sports require rapid whole-body changes of direction in defence or to evade opponents." A raider must be able to move agilely, change direction suddenly, and evade pursuit to create attacking opportunities and score points. The combination of strength, speed, agility, endurance, ideal body posture, and rapid change-of-direction ability constitutes essential capital for a raider to succeed in Kabaddi. These abilities enable a raider to perform optimally, contribute maximally to the team, and achieve victory.

The raider serves as the attacking player who enters the opponent's territory to touch defenders and return to their own area without being captured. The success of a raider largely depends on physical abilities such as speed, agility, balance, movement coordination, and the efficiency of body posture when executing attacking manoeuvres.

In contrast, defenders play a primary role in stopping the raider's attacks through various defensive techniques such as tackling, blocking, and holding. This role demands physical strength, postural stability, and the ability to maintain balance during direct physical contact. Defenders must also work collectively with teammates to form a solid, effective defensive system. Therefore, the physical characteristics and body posture of defenders tend to differ from those of raiders, particularly in terms of body mass and shoulder width.

The differences in role demands between raiders and defenders indicate that body posture and anthropometric characteristics are important factors supporting the performance of Kabaddi athletes. Anthropometry is a scientific discipline that studies the size, shape, and proportions of the human body and is widely used in sports science to assess athletes' physical potential. Anthropometric variables such as Height, body weight, sitting Height, arm span, and shoulder width are believed to be closely related to movement ability, biomechanical efficiency, and athletes' endurance in meeting the demands of the game.

In contact sports such as Kabaddi, body posture does not merely serve an aesthetic or physical measurement function; it also has direct implications for performance and injury risk. Athletes whose body posture matches the demands of the sport and playing position tend to exhibit better movement efficiency, optimal body stability, and greater adaptability to physical pressure during competition. Conversely, a mismatch between body posture and positional demands can hinder athletic performance and increase the risk of injury.

In the context of elite sports development, analysing athletes' body posture is crucial as a scientific basis for selection, position assignment, and training program design. An anthropometric data-based approach enables coaches and sports developers to place athletes in positions that best suit their physical characteristics. In addition, coaches and researchers can use information on athletes' body posture profiles to design more targeted training programs tailored to positional requirements.

Observations on the development of Kabaddi in Indonesia indicate that the sport is still in its developmental stage, including in Aceh Province. Kabaddi athletes in Aceh have different physical backgrounds and sporting cultures than those in countries with strong Kabaddi traditions. This condition results in considerable variation in body posture and physical characteristics among athletes and across playing positions [4].

However, to date, scientific studies that specifically examine the body posture profiles of Kabaddi athletes in Aceh remain very limited. Most Kabaddi-related research has been conducted in India and other South Asian countries. Therefore, the findings may not be fully applicable to the conditions of Kabaddi athletes in Indonesia. Consequently, more contextual and locally based research is needed to support the development of Kabaddi performance training in Aceh.

Based on this background, the present study focuses on analysing the body posture profiles of raider and defender athletes in Aceh Kabaddi. This study is expected to provide a comprehensive overview of athletes' anthropometric characteristics based on playing position and to serve as a scientific foundation for the development of coaching systems, athlete selection, and the sustainable improvement of Kabaddi performance.

METHOD

This study employed a quantitative approach because it utilised numerical data. The collected data consisted of variables that could be analysed using statistical techniques; this aligns with the authors' [5] view that *"quantitative research is research that extensively requires the use of numbers, starting from data collection, data interpretation, and the presentation of results."*

The research used in this study was descriptive, aimed at describing body posture measurements and analysing body posture using video recordings processed with Kinovea software; this is consistent with the opinion of authors [6], who stated that *"descriptive research is a type of research that aims to provide an objective description of a particular phenomenon."*

The research subjects were Aceh Kabaddi athletes who actively participated in training programs and competitions, totalling 23 athletes: 12 raiders and 11 defenders. The sampling technique used was total sampling; therefore, the entire population was included as the research sample.

Data collection was conducted through anthropometric measurements, which included [7]:

1) Body height, measured using a measuring tape or meter tape with a length of 5 meters and a reading accuracy of 1 mm, using a stadiometer.

2) Body weight is one of the parameters that reflect body mass. The instrument used to measure body weight was a digital weighing scale (Idealife brand or equivalent), with a capacity of 150 kg and an accuracy of 0.1 kg.

3) Sitting Height refers to an individual's body height in a seated position. Sitting Height was used to measure upper-body length from the top of the head to the pelvis.

4) The researchers defined arm span as the distance between the tip of the left middle finger and the tip of the right middle finger when the arms are fully extended horizontally and measured it using a segmometer (Cescorf).

5) Biacromial breadth is measured as the distance between two shoulder landmarks, namely the left and right acromion processes. The acromion is the bony prominence of the shoulder that projects upward and outward.

The collected data were analysed using descriptive statistics, including the mean, minimum and maximum values, and frequency distributions for each variable. The results of the analysis were presented in tables and descriptive explanations to facilitate interpretation.

RESULTS AND DISCUSSION

The results showed apparent differences in body posture profiles between raider and defender athletes in Aceh Kabaddi [8]. Descriptions of the anthropometric characteristics for each position are presented in Tables 1 and 2.

Table 1 – Anthropometric Characteristics of Aceh Kabaddi Raiders

Anthropometric Variable	Mean
Body Height (cm)	162.45
Body Weight (kg)	55.86
Sitting Height (cm)	86.16
Arm Span (cm)	163.83
Shoulder Width / Biacromial (cm)	36.62

Based on Table 1, raider athletes exhibit relatively light and proportional body characteristics. Such a posture strongly supports the demands of the raider role, which requires speed, agility, and rapid directional changes during attacks. A relatively light body weight allows raiders to move more efficiently with lower energy expenditure while facilitating evasion of defenders' captures.

Furthermore, the average values of arm span and sitting Height indicate a balanced proportion between the upper and lower body. An adequate arm span provides an advantage in reaching defenders during point-scoring touches. At the same time, balanced sitting height proportions support body stability during explosive movements such as sudden stops or rapid turns [9].

In contrast, the anthropometric characteristics of defender athletes are shown in Table 2.

Table 2 – Anthropometric Characteristics of Aceh Kabaddi Defenders

Anthropometric Variable	Mean
Body Height (cm)	161.31
Body Weight (kg)	66.05
Sitting Height (cm)	85.00
Arm Span (cm)	166.72
Shoulder Width / Biacromial (cm)	38.04

Data in Table 2 indicate that defender athletes have greater body mass and shoulder width compared to raiders. These characteristics provide biomechanical advantages in physical contact, balance, and the generation of strong force during tackles against opposing raiders. Greater body mass also contributes to enhanced stability during physical collisions in matches.

Wider shoulder breadth in defenders supports upper body strength and increases the effectiveness of defensive actions. During tackles, strong shoulder structure enables defenders to control raider movement and reduce escape opportunities. Additionally, a longer arm span further supports effective reach in stopping opponents' movements.

To clarify the differences in body posture profiles between the two positions, Table 3 presents a comparison of anthropometric characteristics.

Table 3 – Comparison of Body Posture Profiles of Aceh Kabaddi Raiders and Defenders

Variable	Raider	Defender
Body Height (cm)	162.45	161.31
Body Weight (kg)	55.86	66.05
Arm Span (cm)	163.83	166.72
Shoulder Width (cm)	36.62	38.04
Dominant Characteristics	Light and agile	Strong and stable

Table 3 shows that the anthropometric differences between raiders and defenders align with the specific role demands of each position in Kabaddi. Raiders rely more on movement efficiency, speed, and agility, while defenders require strength, stability, and resistance to physical contact. These findings confirm that body posture characteristics are crucial factors in supporting athletes' performance effectiveness, depending on their playing positions [10].

From a sports development perspective, these results indicate that the Kabaddi athlete selection process should consider the suitability of body posture to playing positions. Coaches typically assign athletes with light, proportional body postures to raider roles, while assigning athletes with greater body mass and broader shoulder structures to defender roles. Furthermore, training programs should be explicitly designed according to the physical demands of each position to enhance athlete development and performance outcomes.

CONCLUSIONS

Based on the results and discussion, it can be concluded that there are significant differences in body posture profiles between raider and defender athletes in Aceh Kabaddi. Raiders tend to have lighter, more proportional body postures, which strongly support the demands of speed, agility, and manoeuvrability in attacking. These characteristics enable raiders to move more efficiently, maintain balance, and evade opponent captures as effectively as possible.

Conversely, defenders possess greater body mass and shoulder width, providing biomechanical advantages in strength, stability, and defensive effectiveness. A robust body structure allows defenders to engage in physical contact more effectively, maintain their body position during collisions, and stop raider attacks.

These differences in anthropometric characteristics indicate that body posture plays a vital role in supporting athletes' effectiveness in Kabaddi, depending on their playing positions. Appropriate body posture profiles not only enhance performance but also have the potential to reduce injury risk from imbalanced physical loads and stresses during competition.

Therefore, anthropometric analysis can serve as a scientific foundation for athlete selection, position assignment, and the design of more specific and targeted training programs. The results of this study are expected to make a meaningful contribution to the development of Kabaddi performance programs, particularly in Aceh, and to serve as a reference for future research on physical characteristics, performance, and sustainable Kabaddi athlete development.

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