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Physiological demands in Kabaddi and Kho Kho: A Brief Review

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Abstract

Kho Kho and Kabaddi are both popular traditional team games played widely in the Indian subcontinent. They are also classified as tag games. The article also highlights the physiological demands and fundamental techniques between the two sports and the need for flexibility to prevent injuries. Kho Kho players have an average speed of 8.64 seconds in 50 meters and they show a heartbeat of 160 each minutes during the game. The average heart rate_{max} (beat min⁻¹) of Kabaddi players was found to be 184.57. Recovery heart rate was measured to be 165.76. Kabaddi players are heavier than players of most other sports due to the dominance of physicality in the game.

Keywords: Kabaddi, Kho Kho, Physiological demands, heart beats, endurance, running, flexibility, agility

Introduction

Kho Kho and Kabaddi are the most popular traditional tag team games played in the Indian subcontinent dating back to ancient times ^[1]. Playing area in Kho Kho consists of a rectangular court and a central lane that joins two poles located at both ends of the court. There are nine players from the chasing team on the field amongst which eight sit in the central lane while three players from the opposing (defending team) runs around the court, trying to avoid being touched ^[2]. Kabaddi is played between two teams of seven players. A player known as "raider" runs into the opponent team's court half and attempts to touch as many of their players and return to the half court of his team without being tackled by the opposition in 30 seconds. Points are awarded to raider for tagging each opponent's player while the opposition teams scores by stopping the raider. A player is out of the game after being touched or tackled but retrieved back to the court for each point scored by their team from a tag or tackle ^[3].

Kho Kho and Kabaddi are both categorized as team sports due to the incorporation of invariant characteristics: (i) organization of individuals into opposing teams (ii) competition to win or entertain audiences (iii) team members acting towards a common objective (iv) outscoring the opposing team (v) simultaneous and direct interaction between players (vi) a supporting, trusting atmosphere and, (vii) internal coordination between team members ^[4].

Both also fall in the classification of tag game. A tag game is understood as - playground, elimination game where one or more players chase other players to "tag" or touch and mark them out of play, mostly by a hand, others trying to avoid being tagged ^[5].

Kabaddi and Kho Kho share striking similarities in fundamental techniques and therefore, the aim of this review is to examine the physiological dynamics of Kabaddi and Kho Kho, understand the similarities and to further contribute to the knowledge between the sports classified as both tag team game and popular traditional game in the Indian subcontinent. Thus, a better understanding of their modalities can improve preparation, training programme and performance outcome.

Both Kho Kho and Kabaddi demand intense physical stamina, agility, individual proficiency, neuromuscular coordination, lung capacity, quick reflexes, intelligence and presence of mind on the part of both attackers/runners and defenders

Kho Kho

Literature pertaining to physiological demands in Kho Kho are very few. Sprinting, agility, quick movements are the different elements needed in the game of Kho-Kho for dodging,

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escaping the opponents in the running movement which requires various running techniques [7].

Since the game does not merely involve running, but to pursue an opponent to tag/touch, speed is the main fitness component. The average value of Kho Kho players in 50 M is 8.64 second [8]. In the relentless pursuit of 9 minutes at a stretch with varying speed, the game demands exceptional stamina and cardiovascular endurance [9]. As a group, athletes from indigenous sports exhibited faster aerobic performance than athletes involved in more traditional western sports [10].

The best Kho Kho players can quickly adapt their bodies for use in other sports. Flexibility, a key component of bio-motor ability is a fundamental part of Kho Kho and a lot of other sports as well. Key abilities including in Kho-Kho such as, pole dive, heel tap, and others may be seen. If a chaser wishes to quickly provide “Kho” to his team members, he has to be able to extend his leg and hand forward in order to contact his teammates and offer “Kho”; this requires a high degree of flexibility, which would otherwise prevent him from doing so. Also, being flexible keeps them safe from game-related injuries [11].

Kho-Kho game requires high levels of muscular endurance and agility. Players exhibited an average heart rate of 160 beats per minute, indicating a high-intensity activity. The game also requires frequent changes in direction and short bursts of running, which put a significant demand on the players' lower body muscles [12]. The diastolic pressure of kho kho players were found to be more than kabaddi players, which may be due to nature of game and movement which demand more blood volume with greater diastolic pressure [15].

Kabaddi

Kabaddi combines the actions from the game of wrestling, judo, rugby and gymnastics. The important body movements in this game involve catching, holding, locking and jumping. Thus, the possession of desirable anthropometric and physiological characteristics will have a greater advantage in executing a better performance in competition [13].

Kabaddi is an intermittent type of sport, requires both aerobic, anaerobic endurance with a well-built physique, neuro-muscular co-ordination and muscular endurance. The average heart rate_{max} (beat min⁻¹) was found to be 184.57. Recovery heart rate was measured to be 165.76.

The average heart rate and oxygen consumption during the match were 146.5(SD 9.25) beats min⁻¹ and 2.25(0.59) litre min⁻¹ respectively. During raiding the maximum heart rate attained varied from 162.4(11.3) to 177.4(4.2) beats min⁻¹. Out of 40 min of match play a raider raided on average on 8.13(2.03) occasions. The average time per raid was 20.8(6.26) s. The match heart rate and oxygen consumption was 72.3-83.3% of the maximum heart rate, and 43.5-70.5% of VO₂max respectively. Maximum lactate at the end of the match was 6.13(2.53) mmol litre⁻¹. VO₂max and O₂ debt were 3.59(0.36) litre min⁻¹ [47.82(3.68) ml kg⁻¹ min⁻¹] and 5.3(1.85) litres (70 ml kg⁻¹) respectively [6]. Kabaddi players had the somatotype of 2.68--4.71-1.83, with absolute back strength of 175.0 kg which is in conjunction with the finding that they are heavier than players of most other sports like hockey, football, weightlifting, wrestling, boxing [14].

Conclusion

Although, Kabaddi and Kho Kho are classified as team sports and tag games, each has different physiological demands due to the characteristics of such as duration, specific rules,

substitutions. In terms of physiological demand, it can be agreed that endurance is an essential components for both games. Kabaddi calls for greater height and weight than Kho Kho. All these points to the importance of specific trainings and programmes while training the athletes of both the games.

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