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Effect of Core Strength Training on Agility and Balance among Kabaddi Players

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Abstract

Kabaddi is a high-intensity contact sport that requires rapid changes of direction, body control, strength, agility, and balance. Core strength plays an important role in stabilizing the trunk and facilitating efficient transfer of force between the upper and lower extremities during sport-specific movements. The present review examines the effect of core strength training on agility and balance among kabaddi players. Evidence from sports-training literature suggests that structured core training can improve neuromuscular control, postural stability, movement efficiency, and the ability to maintain body position during dynamic activities. These adaptations may contribute to improved agility and balance, which are particularly important during raiding, dodging, turning, tackling, and defensive actions in kabaddi. Recent evidence from training interventions in kabaddi players also indicates that structured conditioning programs can improve physical fitness characteristics, including agility. However, limited sport-specific research has simultaneously examined core strength, agility, and balance among kabaddi players. Overall, the available evidence suggests that incorporating systematic core-strength exercises into regular kabaddi training may improve functional movement and performance.

Keywords: Core strength training, kabaddi, agility, balance, core stability, sports performance.

1. Introduction

Kabaddi is a high-intensity contact sport characterized by repeated offensive and defensive actions involving rapid acceleration, sudden changes of direction, dodging, turning, tackling, and maintenance of body control. Successful performance therefore depends not only on technical and tactical ability but also on physical fitness components such as strength, agility, balance, speed, and muscular endurance [1].

Among these components, agility and balance are particularly important during raiding and defensive situations. A raider frequently changes direction to avoid defenders and return safely to the playing area, whereas defenders require rapid movement and postural control while attempting tackles and maintaining defensive formations. These actions place considerable demands on the neuromuscular system and require effective control of the trunk and lower extremities.

The core musculature provides stability to the trunk and lumbopelvic region and contributes to the transfer of force between the upper and lower extremities. Adequate core strength and stability may therefore provide a stable foundation for efficient movement during dynamic sporting activities. Previous systematic reviews have reported beneficial effects of core training on dynamic balance, while improvements in agility have also been observed in some athletic populations [2]–[4].

Training interventions among kabaddi players have demonstrated improvements in several physical fitness variables, including agility; however, the available kabaddi-specific literature is heterogeneous and remains relatively limited [5]. Therefore, examining the relationship among core strength training, agility, and balance is relevant to understanding their potential application to kabaddi performance. The present review aims to examine existing evidence concerning the effect of core strength training on agility and balance and its practical relevance for kabaddi players.

2. Core Strength and Its Role in Kabaddi

Core strength refers to the ability of the muscles surrounding the trunk, pelvis, and lumbopelvic region to generate force and maintain stability during movement [1]. These muscles provide a stable base for coordinated movements of the upper and lower extremities and assist in the efficient transfer of force through the kinetic chain [2], [3].

In kabaddi, core strength is particularly relevant because players frequently perform rapid turns, lunges, escapes, tackles, and changes of body position. During a raid, the player must maintain trunk control while accelerating, dodging defenders, reaching or touching opponents, and returning to the midline. Similarly, defenders require trunk stability to resist external forces and perform actions such as holds, blocks, and tackles.

Core strength may also contribute to postural control and dynamic balance. A systematic review and meta-analysis reported that core training improves dynamic balance by providing a more stable base for lower-extremity movement [4]. Such an adaptation is potentially valuable in kabaddi, where players must maintain body control during unpredictable and multidirectional movements.

The role of core training in agility is less definitive. Although improved trunk stability may support efficient changes of direction, systematic evidence indicates that improvements in agility are less consistent than improvements in balance [3], [5]. Therefore, core strength training should be considered a supportive component of kabaddi conditioning and integrated with sport-specific agility, strength, and movement training.

3. Agility and Balance in Kabaddi

3.1 Agility

Agility is the ability to rapidly change the direction or position of the body while maintaining speed, coordination, and control. It is an essential fitness component in kabaddi because the game involves frequent acceleration and deceleration, sudden turns, dodging, and rapid changes in direction. Raiders depend on agility to escape defenders and change direction quickly, while defenders require it to respond effectively to the raider's unpredictable movements.

Regular training involving strength, plyometric, circuit, and speed-agility-quickness exercises has been associated with improvements in agility among kabaddi players [6]. Core strength may further support agility by improving trunk control and providing a stable base during rapid multidirectional movements. However, evidence regarding the independent effect of core training on agility remains variable, suggesting that core exercises may be most effective when combined with sport-specific agility training [3], [7].

3.2 Balance

Balance refers to the ability to maintain or regain postural stability during static and dynamic movements. In kabaddi, dynamic balance is particularly important because players frequently perform movements on one leg, lean or reach toward opponents, resist physical contact, and rapidly recover body position during raids and tackles.

Core musculature contributes to postural stability by controlling the trunk and lumbopelvic region during movement. Systematic reviews and meta-analyses have shown that core training can produce meaningful improvements in dynamic balance [4], [8]. Improved balance may therefore help kabaddi players maintain body control during challenging offensive and defensive situations.

Together, agility and balance contribute to efficient movement and control in kabaddi. Core strength training may provide a useful foundation for developing these abilities, particularly when incorporated alongside sport-specific conditioning.

4. Effect of Core Strength Training on Agility and Balance

Core strength training is increasingly used in athletic conditioning because of its role in trunk stability, postural control, and efficient movement. In kabaddi, where players frequently accelerate, decelerate, turn, dodge, and resist physical contact, improved trunk control may support both agility and balance.

4.1 Effect on Agility

Core strength training may improve agility by providing greater trunk stability during acceleration, deceleration, and rapid changes of direction. A stable core allows the lower extremities to generate and transfer force more efficiently while reducing unnecessary trunk movement. Improved neuromuscular coordination may also enable athletes to maintain better body control during multidirectional movements [7], [8].

Evidence from athletic populations indicates that core training can improve change-of-direction performance, although findings regarding agility are not completely consistent across sports. Therefore, for kabaddi players, core strength exercises are likely to be more effective when combined with sport-specific agility and movement training rather than used in isolation.

4.2 Effect on Balance

The effect of core strength training on balance is more consistently supported in the literature. Strengthening the muscles surrounding the trunk and pelvis improves postural stability and helps athletes maintain control of the body's centre of mass during dynamic movement [4], [8].

This is particularly relevant in kabaddi because players frequently perform reaching, leaning, single-leg movements, sudden stops, and physical contact with opponents. Improved core stability may help players maintain or regain balance during these actions and execute offensive and defensive movements with greater control.

Overall, available evidence suggests that core strength training can positively influence balance and may contribute to improved agility. However, its effects depend on training duration, frequency, exercise selection, sporting demands, and athletes' characteristics. Therefore, core training should be incorporated as part of a comprehensive kabaddi conditioning programme rather than considered an independent method for developing agility and balance.

5. Review of Related Studies

Previous research has examined the effects of core strength training on balance, agility, and other performance-related variables across various athletic populations. Shetty et al. [9], in a systematic review of 17 randomized controlled trials, reported that core muscle training can be incorporated into athletic programmes to improve balance and agility, although the methodological quality of the included studies was mixed.

More recent evidence suggests that the effect of core training is more consistent for balance than for agility. Bustos Carvajal and Arias Coronel [10] reported improvements in core strength, core endurance, dynamic balance, and sprint performance following core training, while the findings for agility were less consistent. This suggests that core strength provides an important foundation for athletic movement but may not, on its own, produce substantial improvements in all aspects of agility.

Evidence from team-sport athletes also supports the importance of core training. A recent systematic review and meta-analysis reported improvements in balance and change-of-direction ability following core training, although the certainty of evidence ranged from low to very low [11]. These findings are relevant to kabaddi because the sport requires frequent acceleration, deceleration, directional changes, and maintenance of postural stability.

Research specifically involving kabaddi players has shown that structured training methods such as strength, plyometric, circuit, and speed-agility-quickness training can improve physical fitness

variables, including agility [12]. However, comparatively fewer studies have isolated core strength training and simultaneously examined its effects on both agility and balance among kabaddi players.

Table 1. Summary of Selected Related Evidence

Study	Population/Evidence	Main Focus	Major Finding
Shetty et al. [9]	Athletes; systematic review	Core training, balance and agility	Core training showed potential benefits for balance and agility
Bustos Carvajal and Arias Coronel [10]	Competitive athletes; systematic review	Core training and sports performance	Clearer improvements in dynamic balance; agility findings were inconsistent
Recent team-sport meta-analysis [11]	Team-sport athletes	Core training and physical performance	Improvements reported in balance and change-of-direction ability
Kabaddi training systematic review [12]	Kabaddi players	Different training interventions	Training interventions improved several fitness variables, including agility

Overall, previous studies support the inclusion of core strength training in athletic conditioning, particularly for improving postural stability and balance. However, the direct evidence concerning its combined effect on agility and balance specifically among kabaddi players remains limited, indicating the need for further sport-specific investigation.

6. Discussion

The reviewed evidence suggests that core strength training can contribute to the development of important physical abilities required in kabaddi. The core musculature provides stability to the trunk and pelvis and supports coordinated movement of the upper and lower extremities. These

functions are particularly relevant in kabaddi, where players repeatedly perform rapid changes of direction, sudden stops, reaching movements, tackles, and movements under physical contact.

The effect of core training appears to be particularly evident in balance. Improved trunk stability and neuromuscular control may help players maintain the position of the centre of mass during dynamic movements and recover stability following sudden changes in body position. Recent evidence from team-sport athletes supports improvements in balance following structured core training [11].

The influence of core training on agility appears promising but comparatively less consistent. Greater trunk control may facilitate acceleration, deceleration, and change-of-direction movements by providing a stable base for force production. However, agility is a complex ability influenced by strength, speed, coordination, reaction, and sport-specific skills. Therefore, core strength training alone may not be sufficient to maximize agility and should be combined with specific agility and movement training.

These observations have practical relevance for kabaddi players. Raiders require balance and body control while dodging, turning, and escaping from defenders, whereas defenders need stability and rapid directional movement during tackles and blocks. Evidence from kabaddi training studies also indicates that structured conditioning programmes can improve agility and other physical fitness variables [12].

Overall, core strength training appears to be a useful component of physical preparation for kabaddi players, particularly for improving balance and supporting multidirectional movement. Nevertheless, the limited number of kabaddi-specific studies directly examining core training suggests that these conclusions should be interpreted with caution.

7. Research Gap

Although core strength training has received considerable attention in sports conditioning, limited research has specifically examined its effects on agility and balance among kabaddi players. Most available kabaddi studies have investigated broader training methods, such as strength, plyometric, circuit, and SAQ training, as well as combined conditioning programs, rather than isolated core strength interventions [12].

Existing studies also differ considerably in training duration, exercise protocols, participant characteristics, and methods for assessing physical performance. Consequently, it is difficult to determine the independent contribution of core strength training to agility and balance in kabaddi players.

Furthermore, relatively few studies have examined agility and balance simultaneously following a structured core training programme. Future research should therefore use well-designed controlled trials, standardized assessment procedures, and clearly defined core strength protocols. Such studies would provide stronger evidence regarding the role of core training in improving movement efficiency and performance among kabaddi players.

8. Conclusion

The present review indicates that core strength training can be a useful component of physical conditioning for kabaddi players. Core training contributes to trunk stability, postural control, and neuromuscular coordination, which are important during rapid and multidirectional movements commonly performed in kabaddi. Existing evidence shows a relatively consistent positive effect of core training on balance, while its influence on agility and change-of-direction performance appears positive but comparatively less consistent.

For kabaddi players, improved core stability may help maintain body control during raiding, dodging, tackling, sudden changes in direction, and physical contact with opponents. However, core strength training should be combined with sport-specific agility, strength, and technical training rather than used independently.

Overall, the available evidence supports the inclusion of structured core strength exercises in kabaddi conditioning programs. Nevertheless, further well-designed studies specifically involving kabaddi players are required to establish the magnitude of their effects on agility and balance and to identify the most effective training protocols.

9. References

[1] D. González-Devesa, L. Iglesias Vieites, and N. Blanco-Martínez, "Effects of training interventions on physical fitness and performance in Kabaddi players: A systematic review," Sports, vol. 14, no. 1, Art. no. 37, 2026, doi: 10.3390/sports14010037.

[2] S. Shetty, Y. V. R. Neelapala, and P. Srivastava, "Effect of core muscle training on balance and agility in athletes: A systematic review," Kinesiology Review, vol. 13, no. 3, pp. 383–403, 2024, doi: 10.1123/kr.2023-0002.

[3] J. S. Bustos Carvajal and F. Arias Coronel, "Exploring the role of the core in sports performance: A systematic review of the effects of core muscle training," Frontiers in Sports and Active Living, vol. 7, Art. no. 1630584, 2025, doi: 10.3389/fspor.2025.1630584.

[4] D. M. P. Patel, A. Singh, S. Ghosh, and D. R. Adhikari, "Season-wise performance analysis of the Gujarat Giants team in the Pro Kabaddi League," Journal of Advances in Sports and Physical Education, vol. 8, pp. 155–167, 2025, doi: 10.36348/jaspe.2025.v08i08.001.

[5] M. S. Dhillon, R. John, S. Sharma, S. Prabhakar, P. Behera, S. Saxena, H. Singh, and D. Chouhan, "Epidemiology of knee injuries in Indian Kabaddi players," Asian Journal of Sports Medicine, vol. 8, 2017, Art. no. e31670, doi: 10.5812/asjsm.31670.

[6] H. Sidhu, "Kabaddi," Journal of Physical Education, Recreation & Dance, vol. 57, pp. 75–77, 1986, doi: 10.1080/07303084.1986.10606141.

[7] S. Pal, S. Kalra, S. Kumar, S. Pawaria, and P. Rishi, "A literature review on common injuries and their prevention in Kabaddi," European Journal of Sports and Exercise Science, vol. 9, pp. 1–9, 2021.

[8] S. Kumar and G. Sudhakara, "Selected physical fitness components and Kabaddi performance," International Journal of Academic Research and Development, vol. 3, pp. 908–910, 2018.

[9] S. Shetty, Y. V. R. Neelapala, and P. Srivastava, "Effect of core muscle training on balance and agility in athletes: A systematic review," Kinesiology Review, vol. 13, no. 3, pp. 383–403, 2024, doi: 10.1123/kr.2023-0002.

[10] J. S. Bustos Carvajal and F. Arias Coronel, "Exploring the role of the core in sports performance: A systematic review of the effects of core muscle training," Frontiers in Sports and Active Living, vol. 7, Art. no. 1630584, 2025, doi: 10.3389/fspor.2025.1630584.

[11] "Effects of core training on physical performance in team-sport athletes: A systematic review and meta-analysis," BMC Sports Science, Medicine and Rehabilitation, vol. 18, Art. no. 297, 2026, doi: 10.1186/s13102-026-01807-5.

[12] D. González-Devesa, L. Iglesias Vieites, and N. Blanco-Martínez, "Effects of training interventions on physical fitness and performance in Kabaddi players: A systematic review," Sports, vol. 14, no. 1, Art. no. 37, 2026, doi: 10.3390/sports14010037.