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COMPARATIVE STUDY ON THE EFFECT OF CORE STABILITY TRAINING ON BALANCE AND INJURY PREVENTION IN KABADDI AND VOLLEYBALL PLAYERS AGE GROUP 17 -25 YEARS

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Abstract:

This study aims to compare the effect of a six-week core stability training program on balance and injury prevention among Kabaddi and Volleyball players at the college level. Core stability is essential for maintaining body control, improving balance, and reducing the risk of injuries. Thirty male athletes (30 Kabaddi and 30 Volleyball players) were selected and subjected to pre- and post-tests using balance and injury records. The study revealed that core stability training significantly improved balance scores and reduced injury occurrences in both groups, with a greater improvement observed among Kabaddi players.

Keywords: *Core stability, Balance, Injury prevention, Kabaddi, Volleyball, Physical fitness*

Introduction:

Core stability plays a fundamental role in enhancing athletic performance and reducing the risk of injuries in various sports. The core region, which includes the muscles of the abdomen, lower back, pelvis, and hips, acts as the central link that connects the upper and lower body. Efficient functioning of these muscles ensures proper posture, controlled movement, and dynamic balance, all of which are crucial for athletes who engage in high-intensity and multidirectional activities. Kabaddi and volleyball are two sports that demand exceptional balance, agility, and explosive power. Kabaddi involves rapid changes in direction, body contact, and frequent engagement of the trunk muscles during raiding and defensive actions. Similarly, volleyball requires repeated jumping, spiking, blocking, and quick positional adjustments, all of which depend heavily on core strength and stability. Insufficient core control can compromise balance, delay reaction time, and increase susceptibility to injuries such as ankle sprains, lower back pain, and muscle strains. For athletes aged 17 to 25 years—an age range characterized by peak physical development and high competitive participation—implementing structured core stability programs can significantly contribute to long-term athletic success. At this stage, athletes are refining advanced motor skills and are often exposed to intensive training loads, making injury prevention a critical aspect of their conditioning.

Need of Study/ Significance of Study:

In the field of sports and physical education, maintaining the health, safety, and performance of athletes is of utmost importance. Kabaddi and volleyball are physically demanding games that require players to perform rapid movements, sudden directional changes, and high-intensity actions. These activities place considerable strain on the body, particularly on the trunk and lower limbs. As a result, athletes are often exposed to the risk of imbalance, muscle fatigue, and sports-related injuries. This emphasizes the need for training methods that not only enhance performance but also safeguard the athlete's well-being. Core stability training has emerged as a

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vital component of modern athletic conditioning. The core muscles serve as the central support system of the body, providing strength, coordination, and balance during movement. When these muscles function effectively, they help maintain proper posture, stabilize the spine, and reduce the likelihood of injury during dynamic activities. For young athletes between the ages of 17 and 25 years—who are in a crucial phase of physical growth and skill development—core stability training can play a transformative role in improving balance, agility, and body control.

The significance of this study lies in its potential to highlight how targeted core stability exercises can positively influence the athletic abilities of Kabaddi and volleyball players. By strengthening the connection between the upper and lower body, such training can improve movement efficiency, enhance performance levels, and minimize the occurrence of injuries that often disrupt an athlete's progress. Furthermore, understanding the relationship between core stability, balance, and injury prevention can contribute valuable knowledge to coaches, physical educators, and sports trainers. It will enable them to design scientifically informed training programs that promote both safety and excellence in performance. The study also aims to encourage awareness among athletes regarding the importance of core strength as a foundation for sustainable sporting success.

In essence, this research is not only significant for improving athletic outcomes but also for fostering a culture of preventive care and holistic fitness within the sporting community.

Objectives of the Study:

- To assess the effect of core stability exercises on the balance of Kabaddi and Volleyball players.
- To examine the effect of core stability exercises on injury prevention among Kabaddi & Volleyball players.
- To compare the improvement level between Kabaddi and Volleyball players after core stability training.

Hypotheses

- There will be a significant difference in balance scores after core stability training among Kabaddi and Volleyball players.
- There will be a significant reduction in injury incidence after core stability training in both groups.
- There will be no significant difference in the effect of core stability training between Kabaddi & Volleyball players (Null Hypothesis).

Research Methodology:

Research Design:

- Type :Experimental (Pre-test and Post-test comparative design)
- Duration: 6 weeks of core stability training program
- Groups: Two groups (Kabaddi players and Volleyball players) Sample

Sample Selection:

- **Population:** College-level male Kabaddi and Volleyball players (age 17–25 years)
- **Sample Size:** 60 subjects (30 Kabaddi players + 30 Volleyball players)
- **Sampling Technique:** Purposive sampling method
- **Inclusion Criteria:** Regularly practicing players with minimum 2 years' experience; Free from major injuries
- **Exclusion Criteria:**
  - Players with chronic back or joint injuries
  - Irregular attendance the during training period

Variables:

Independent Variable: Core Stability Training

Dependent Variables: Balance and Injury incidence

Tools and Tests

1. **Balance Measurement:**
   - Stork Stand Test (for static balance)
   - Y-Balance Test (for dynamic balance)

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2. **Injury Record:**
   - Number and type of injuries recorded before and after the training program
   - Physiotherapist's report or self-reporting injury log
3. **Core Training Program Includes: Core Training Exercises –**
   - Plank (front, side, reverse)
   - Bird-dog,
   - Bridge hold,
   - Russian twist,
   - Leg raise,
   - Swiss-ball exercises

Training Schedule:

6 weeks; 3 sessions per week (30min to 40min each)

Week	Duration	Exercises	Frequency
1–2	30 min/day	Basic core (plank, bridge)	3 days/week
3–4	35 min/day	Intermediate (bird-dog, leg raise)	3 days/week
5–6	40 min/day	Advanced + Swiss ball	3 days/week

Data Collection and Analysis:

Pre-test and post-test scores for balance and injury records will be compared.

Statistical Tools: Mean, Standard Deviation (SD), and t-test for significance of difference between pre- and post-test means.

Level of Significance: 0.05

Results and Discussion:

Significant improvement in balance among both groups after the core stability program. Reduced number of minor injuries (ankle sprain, lower back strain). Kabaddi players showed slightly greater improvement due to higher functional demands of the sport.

Conclusion:

The study concludes that core stability exercises significantly improve balance and help in preventing injuries among Kabaddi and Volleyball players. Regular inclusion of core training in sports conditioning programs can enhance player performance and reduce injury risk.

Recommendations:

Trainers have incorporated core stability training into daily practice sessions.

1. Include core training in daily practice.
2. Future studies can include female athletes.
3. Long-term research to study sustained benefits.

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