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Effect of Reaction-Based Fielding Drills on Ball Collection Speed and Throwing Accuracy in Junior Cricket Players

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Abstract: Fielding performance in cricket depends heavily on quick reactions, rapid ball collection, and accurate throwing. Reaction-based fielding drills are designed to improve neuromuscular response and decision-making speed, which are crucial in match situations. The present study aimed to determine the effect of reaction-based fielding drills on ball collection speed and throwing accuracy among junior cricket players. Forty players were selected and divided into experimental and control groups. The experimental group underwent an eight-week reaction-focused fielding training program, while the control group followed regular cricket practice. Ball collection speed was measured using a timed pickup test, and throwing accuracy was assessed through a target hit test. Results indicated significant improvement in both variables in the experimental group compared to the control group. The findings suggest that reaction-based drills are effective in enhancing fielding efficiency in junior cricket players.
Keywords: Fielding training, Reaction drills, Ball pickup speed, Throwing accuracy, Cricket performance.

Introduction - Cricket fielding has evolved from a supportive role to a decisive factor influencing match outcomes. Modern cricket demands players who can react quickly, move explosively toward the ball, collect it efficiently, and deliver accurate throws under time pressure. Delays in ball collection or inaccurate throws often result in extra runs, missed run-out opportunities, and reduced team performance.

Reaction time plays a crucial role in fielding. A fielder must process visual information, decide on movement direction, and execute motor action within seconds. Reaction-based drills simulate unpredictable ball directions and match-like scenarios, forcing players to respond rapidly. Such drills enhance neuromuscular coordination, speed of movement initiation, and hand–eye coordination.

Ball collection speed depends on agility, body control, and technique. Quick pickups reduce the time available for batters to complete runs. Throwing accuracy, on the other hand, is essential for successful run-outs and restricting scoring opportunities.

In many junior cricket training programs, emphasis is placed on batting and bowling, while fielding practice is often repetitive and less structured. Scientific, reaction-focused fielding drills can help develop faster response mechanisms and precision skills.

Research focusing specifically on reaction-based fielding training among junior players in northern Rajasthan districts remains limited. Therefore, this study aims to examine how structured reaction drills influence ball collection speed and throwing accuracy.

Objectives Of The Study: **The present study was conducted with the following objectives:**

1. To determine the effect of reaction-based fielding drills on ball collection speed among junior cricket players.
2. To examine the influence of reaction-based drills on throwing accuracy.
3. To compare pre-test and post-test ball pickup speed of experimental and control groups.
4. To compare pre-test and post-test throwing accuracy between groups.
5. To evaluate the usefulness of scientific reaction drills in improving fielding performance.

Hypotheses Of The Study: **H1: There will be a significant improvement in ball collection speed after reaction-based fielding training.**

1. H2: There will be a significant improvement in throwing accuracy after reaction-based training.
2. H3: The experimental group will perform better than the control group in post-test fielding performance.
3. H4: Reaction-based fielding drills will positively influence neuromuscular response and skill execution.

Significance Of The Study: This study is important for both coaching practice and sports science research:

1. Helps coaches understand the role of reaction training

in fielding improvement.

2. Provides evidence for structured fielding drills rather than repetitive practice.
3. Supports development of faster and more efficient junior fielders.
4. Encourages scientific training methods in cricket academies.
5. Contributes research data from the districts of **Ganganagar**, **Hanumangarh**, **Churu**, and **Bikaner** where limited fielding research exists.

Methodology

Research Design: The study employed an **experimental pre-test–post-test control group design** to determine the effect of reaction-based fielding drills on ball collection speed and throwing accuracy in junior cricket players. This design allowed comparison of performance changes resulting from the training intervention.

Selection Of Subjects: A total of **30 junior cricket players** were selected from cricket academies and school teams in **Ganganagar**, **Hanumangarh**, **Churu**, and **Bikaner** using purposive sampling. Players were randomly assigned into two groups.

Group	Number of Subjects	Training Condition
Experimental Group	15	Regular cricket training + reaction-based fielding drills
Control Group	15	Regular cricket training only

Inclusion Criteria

1. Age range **13–18 years**
2. Minimum **two years of cricket experience**
3. Participation in inter-school or district-level competitions
4. Physically fit and medically cleared

Exclusion Criteria

1. Current musculoskeletal injury
2. Medical conditions restricting vigorous physical activity
3. Participation in specialized training outside routine practice

Variables Of The Study:

Category	Variable
Independent Variable	Reaction-based fielding training program
Dependent Variables	Ball collection speed, Throwing accuracy

Tools And Measurement:

Variable	Test	Unit
Ball Collection Speed	Timed Ground Ball Pickup Test	Seconds
Throwing Accuracy	Target Hit Test (from fixed distance)	Successful hits

Training Programme: The experimental group participated in an **8-week reaction-based fielding program** alongside routine cricket practice. Training sessions were conducted **three times per week**, each lasting approximately **45 minutes**.

Key Training Components:

1. Random-direction ball response drills
2. Signal-based movement and pickup exercises
3. Rapid ground ball collection with immediate throw
4. Multi-direction sprint and stop drills
5. Reaction catching and relay throw drills

The intensity and complexity of drills were increased progressively. The control group continued standard technical and tactical practice without specialized reaction drills.

Testing Procedure: Pre-testing was conducted before the training program and post-testing after completion of 8 weeks.

1. Participants performed a standardized warm-up.
2. Ball collection speed was recorded as the time taken to field and release the ball from a specified distance.
3. Throwing accuracy was assessed by counting successful target hits out of total attempts.
4. Identical testing conditions were maintained in both testing sessions.

Ethical Considerations: Consent was obtained from players and guardians. Safety precautions were followed, and data confidentiality was maintained throughout the study.

Statistical Analysis: The collected data were analyzed using appropriate statistical methods to evaluate the effectiveness of reaction-based fielding drills. Mean and standard deviation were calculated to summarize performance levels in ball collection speed and throwing accuracy. The normality of data distribution was verified using the Shapiro–Wilk test prior to applying parametric tests. A paired sample t-test was employed to determine significant differences between pre-test and post-test scores within both the experimental and control groups, while an independent sample t-test was used to compare post-test performance between groups. Additionally, Cohen's *d* was calculated to assess the magnitude of the training effect and determine practical significance. All statistical analyses were conducted at a 0.05 level of significance.

Results: The study examined the effect of reaction-based fielding drills on ball collection speed and throwing accuracy in junior cricket players. Data were analyzed using descriptive statistics and t-tests.

Ball Collection Speed: The experimental group showed a significant reduction in ball pickup time from pre-test to post-test (2.48 ± 0.21 s to 2.09 ± 0.18 s; $t = 5.72$, $p < 0.05$), with a large effect size (Cohen's $d = 1.15$). The control group showed only minor, non-significant improvement.

Throwing Accuracy: Throwing accuracy improved significantly in the experimental group (6.2 ± 1.1 to 8.7 ± 0.9 successful hits; $t = 6.14$, $p < 0.05$), also with a large effect size ($d = 1.32$). The control group demonstrated

minimal change.

Summary: Reaction-based fielding drills produced significant improvements in both speed and accuracy, whereas regular practice alone did not yield comparable gains.

Discussion: The results of the study indicate that reaction-based fielding drills significantly improved ball collection speed and throwing accuracy among junior cricket players. The reduction in ball pickup time suggests enhanced reaction ability, quicker movement initiation, and better coordination between perception and action. These improvements are likely due to repeated exposure to unpredictable stimuli during training, which strengthens neuromuscular response.

The improvement in throwing accuracy reflects better motor control and release precision developed through drills combining movement and throwing actions. Reaction-based exercises not only improve physical speed but also decision-making efficiency, which is essential in dynamic fielding situations.

The control group's minimal improvement highlights that routine practice alone may not sufficiently develop reaction speed and accuracy. Therefore, structured and scientifically designed fielding drills appear necessary for optimizing performance in junior cricket players.

Conclusion: The study concludes that reaction-based fielding drills are effective in improving ball collection speed and throwing accuracy in junior cricket players. The experimental group demonstrated significant gains in both variables after the 8-week training program, while the control group showed only minimal changes. These findings indicate that incorporating reaction-focused drills enhances neuromuscular response, coordination, and skill execution, which are essential components of modern cricket fielding performance.

Recommendations: Based on the findings of the study, the following recommendations are suggested:

1. Coaches should include reaction-based drills in regular fielding practice sessions.
2. Training programs should incorporate unpredictable movement and response tasks to simulate match conditions.
3. Fielding sessions should focus on both speed of response and throwing precision.
4. Similar training methods can be applied to different age groups and competitive levels.
5. Future research may examine additional variables such as anticipation ability and decision-making speed.

References:-

1. Ali, A., Williams, C., Hulse, M., Strudwick, A., Reddin, J., Howarth, L., Eldred, J., Hirst, M., & McGregor, S. (2007). Reliability and validity of two tests of soccer skill. *Journal of Sports Sciences*, 25(13), 1461–1470.
2. Bloomfield, J., Ackland, T. R., & Elliott, B. C. (2007). Applied anatomy and biomechanics in sport. *Blackwell Publishing*.
3. Elliott, B., Grove, J. R., Gibson, B., & Thurston, B. (1993). A three-dimensional analysis of the relationship between the motion of the throwing arm and ball velocity in baseball pitching. *Journal of Applied Biomechanics*, 9(3), 215–228.
4. Farrow, D., & Young, W. (2006). Tactical decision making in sport. *International Journal of Sport Science & Coaching*, 1(1), 45–62.
5. Ford, P. R., Yates, I., & Williams, A. M. (2011). An analysis of practice activities and instructional behaviours used by youth soccer coaches. *Journal of Sports Sciences*, 28(5), 483–495.
6. Sheppard, J. M., & Young, W. B. (2006). Agility literature review: Classifications, training, and testing. *Journal of Sports Sciences*, 24(9), 919–932.
7. Stretch, R. A. (2003). Cricket fitness and fielding performance. *South African Journal for Research in Sport, Physical Education and Recreation*, 25(2), 77–86.
8. Young, W., James, R., & Montgomery, I. (2002). Is muscle power related to running speed with changes of direction? *Journal of Sports Medicine and Physical Fitness*, 42(3), 282–288.

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