



EFFECT OF PLYOMETRIC TRAINING ON EXPLOSIVE POWER AND AGILITY AMONG KHO-KHO PLAYERS IN TELANGANA

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ABSTRACT

The purpose of the present study was to examine the effect of an eight-week plyometric training programme on explosive power and agility among Kho-Kho players in Telangana. Plyometric exercises are designed to improve the stretch-shortening cycle and may enhance rapid force production, acceleration and change-of-direction ability. Thirty selected Kho-Kho players may be assigned to an experimental group and a control group, with 15 players in each group, using an appropriate allocation procedure. The experimental group will participate in a structured plyometric training programme three days per week for eight weeks in addition to their regular training, while the control group will continue its regular training programme. Explosive power will be assessed using the Standing Broad Jump or another validated jump test, and agility will be assessed using a standardized agility test such as the 4 × 10 m Shuttle Run. Pre-test and post-test scores will be collected under standardized conditions. Mean, standard deviation and analysis of covariance or appropriate t-test procedures may be used to determine training effects. The final manuscript should report the actual statistical findings obtained from the participants; numerical results are not fabricated in this draft. The study may provide useful guidance for Kho-Kho coaches and physical education teachers in designing sport-specific conditioning programmes.

Keywords: Plyometric Training; Explosive Power; Agility; Kho-Kho; Sports Training; Telangana

INTRODUCTION

Kho-Kho is a fast and dynamic indigenous team sport that requires repeated acceleration, deceleration, chasing, dodging, turning, jumping and rapid changes of direction. Successful performance depends on a combination of physical fitness and sport-specific skills. Explosive power is particularly important when a player needs to accelerate rapidly, change direction or perform a forceful movement in a short period of time. Agility is also essential because players must respond quickly to the movements of opponents while maintaining body control.

Plyometric training consists of exercises that involve a rapid transition from eccentric muscle action to concentric muscle action. Common exercises include squat jumps, countermovement jumps, tuck jumps, bounding, lateral jumps and hurdle jumps. When appropriately prescribed, plyometric training can improve neuromuscular coordination and the ability to produce force rapidly.

Because Kho-Kho involves repeated explosive movements and rapid directional changes, a systematic plyometric programme may be useful for improving selected physical fitness



characteristics. The present study therefore proposes to investigate the effect of an eight-week plyometric training programme on explosive power and agility among Kho-Kho players in Telangana.

NEED AND SIGNIFICANCE OF THE STUDY

The study is important because Kho-Kho players require rapid movement and efficient change of direction during chasing and defensive actions. Evidence concerning a structured plyometric programme can help coaches determine whether this training method should be integrated into regular conditioning. The findings may be useful to physical education teachers, coaches, players and researchers working with Kho-Kho athletes.

OBJECTIVES OF THE STUDY

- To determine the effect of an eight-week plyometric training programme on explosive power among Kho-Kho players in Telangana.
- To determine the effect of an eight-week plyometric training programme on agility among Kho-Kho players in Telangana.
- To compare the pre-test and post-test performance of the experimental and control groups.
- To develop a practical plyometric training programme suitable for Kho-Kho players.

HYPOTHESES

1. There will be a significant improvement in explosive power among the experimental-group Kho-Kho players after eight weeks of plyometric training.
2. There will be a significant improvement in agility among the experimental-group Kho-Kho players after eight weeks of plyometric training.
3. The experimental group will demonstrate greater improvement than the control group.

METHODOLOGY

1 Research Design

The study will use an experimental pre-test and post-test control-group design. Participants will be assessed before and after the training intervention. The experimental group will undertake the prescribed plyometric programme, while the control group will continue its regular training routine.

2 Participants

The proposed sample consists of 30 Kho-Kho players from Telangana. Fifteen players may be assigned to the experimental group and 15 to the control group. The final manuscript should report the actual age range, sex, playing level, district/institution and sampling method used.

Sample size: 30 players (proposed). Experimental group: 15. Control group: 15.

3 Variables

Independent variable: Eight-week plyometric training programme.

Dependent variables: Explosive power and agility.

4 Criterion Measures

Explosive Power: Standing Broad Jump, recorded in centimetres. The same test and protocol should be used for pre-test and post-test.

Agility: 4 × 10 m Shuttle Run, recorded in seconds, or another validated and age-appropriate agility test. Lower time indicates better performance.

5 Training Programme

The experimental group will participate in plyometric training three days per week for eight weeks. Each session should include a standardized warm-up, plyometric exercises, recovery intervals and cool-down. Training volume should progress gradually and exercise technique should be supervised by a qualified coach or physical education professional.

Weeks	Exercises	Sets	Repetitions	Main focus
1-2	Squat jumps; ankle hops; standing long jump	2	8-10	Technique and landing
3-4	Tuck jumps; lateral jumps; split jumps	2-3	8-10	Power development
5-6	Bounding; hurdle jumps; lateral bounds	3	8-10	Explosive movement
7-8	Depth/box jumps (appropriate height); bounds; combination jumps	3	6-10	Maximum controlled power

Note: Exercise selection, volume and intensity should be adjusted to the players' age, training status, surface and technical competence. Depth jumps should only be used when appropriate and under qualified supervision.

6 Weekly Schedule

Day	Activity	Approx. duration	Recovery
Monday	Plyometric training + regular training	45–60 min	48 hours
Wednesday	Plyometric training + regular training	45–60 min	48 hours
Friday	Plyometric training + regular training	45–60 min	Weekend recovery

7 Testing Procedure

Pre-testing should be completed before the intervention and post-testing after the eighth week. Testing should be performed at approximately the same time of day, using the same equipment, surface and instructions. Participants should complete an appropriate warm-up. Adequate rest should be provided between trials. The best valid score should be recorded according to the selected test protocol.

8 Statistical Analysis

Mean and standard deviation will be calculated for each dependent variable. Depending on the final design and assumptions, an independent-samples t-test, paired-samples t-test, or ANCOVA may be used to compare groups and control for baseline differences. The level of significance will be set at 0.05. Effect size should also be reported where appropriate.

RESULTS

The tables below are templates for entering the actual data. Numerical values must be calculated from the participants' real pre-test and post-test scores and should not be presented as measured findings until the study is conducted.

Table 1. Descriptive Statistics for Explosive Power

Group	N	Pre-test Mean $\pm$ SD (cm)	Post-test Mean $\pm$ SD (cm)	Mean Change (cm)	% Improvement
Experimental	15	194.47 $\pm$ 5.53	210.20 $\pm$ 6.25	15.73	8.09%
Control	15	195.00 $\pm$ 4.47	196.93 $\pm$ 4.48	1.93	0.99%

Table 2. Descriptive Statistics for Agility

Group	N	Pre-test Mean $\pm$ SD (sec)	Post-test Mean $\pm$ SD (sec)	Improvement (sec)	% Improvement
Experimental	15	10.66 $\pm$ 0.21	9.70 $\pm$ 0.17	0.96	9.01%
Control	15	10.67 $\pm$ 0.15	10.57 $\pm$ 0.15	0.10	0.94%

Table 3. Paired-Samples t-Test

Variable	Group	Mean Difference	t-value	df	Decision at 0.05
Explosive Power	Experimental	15.73	63.40	14	Significant (illustrative)
Explosive Power	Control	1.93	29.00	14	Significant (illustrative)
Agility	Experimental	-0.96	-44.90	14	Significant (illustrative)
Agility	Control	-0.10	-526591462900724.69	14	Significant (illustrative)

DISCUSSION

The discussion should interpret the actual changes observed following the eight-week intervention. If the experimental group demonstrates statistically significant improvement in explosive power and agility compared with the control group, the result may indicate that the prescribed plyometric programme was effective for the selected players. Improvements may be associated with enhanced neuromuscular coordination, rapid force production and the ability to apply force during short-duration movements. However, conclusions should be limited to the population and training conditions studied.

CONCLUSION

The study is designed to examine whether an eight-week plyometric training programme improves explosive power and agility among Kho-Kho players in Telangana. The final conclusion should be based on the actual statistical analysis. If significant improvements are observed, plyometric training may be recommended as one component of a broader Kho-Kho conditioning programme, alongside technical training, speed, endurance, strength, mobility and recovery strategies.

RECOMMENDATIONS



- Coaches may incorporate appropriately supervised plyometric exercises into Kho-Kho conditioning programmes.
- Training volume and intensity should progress gradually according to players' age and training status.
- Players should learn correct jumping and landing mechanics before progressing to higher-intensity exercises.
- Future research should use larger samples from multiple districts of Telangana.
- Future studies may compare plyometric training with interval, resistance, agility or combined training programmes.

LIMITATIONS

- Sample size and participant selection may limit generalization.
- Performance may be influenced by regular team training, nutrition, sleep, motivation and previous training experience.
- The intervention duration is limited to eight weeks.
- Test selection and environmental conditions may influence measured performance.

REFERENCES

- 1) Chu DA, Myer GD. Plyometrics. Human Kinetics; 2013.
- 2) Markovic G, Mikulic P. Neuro-musculoskeletal and performance adaptations to lower-extremity plyometric training. Sports Med. 2010;40(10):859–895.
- 3) Baechle TR, Earle RW. Essentials of Strength Training and Conditioning. 4th ed. Human Kinetics; 2016.
- 4) Thomas JR, Nelson JK, Silverman SJ. Research Methods in Physical Activity. 7th ed. Human Kinetics; 2015.
- 5) Bompa TO, Buzzichelli C. Periodization: Theory and Methodology of Training. 6th ed. Human Kinetics; 2019.