

“Effect of Plyometrics exercises on Shooting accuracy in basketball players.”

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INTRODUCTION

Basketball

Basketball is a game of continuously changing tempo requiring players to be able to sustain high levels of continuous effort, especially in scoring points, which when not scored, leads to wasted efforts¹. It is one of the world's most popular and widely viewed sports. The commonly used techniques are shooting, passing, dribbling, and rebounding, as well as specialized player positions and offensive and defensive structures (player positioning) and techniques. Typically, the tallest members of a team will play "center", "power forward" or "small forward" positions, while shorter players or those who possess the best ball-handling skills and speed play "point guard" or "shooting guard. Competitive basketball is primarily an indoor sport played on a carefully marked and maintained basketball court. Points are scored by shooting the ball into a horizontally elevated hoop. It has been assumed previously that increasing muscle strength will increase throwing speed. The strength of shoulder adductors, wrist extensors, and elbow extensors had predicted throwing speed. The overhead motions such as throwing, javelin throw, servicing in tennis, etc. are highly skilled movements. Such movements require flexibility, muscular strength, coordination, synchronization, and neuromuscular control of the arm (**Keith 2000**). The throwing action may be divided into three distinct phases, namely the winding-up phase, the cocking phase, and the follow-through phase. Sound technique and a well-adjusted neuromuscular system are needed for a well-coordinated, powerful throw.

Operational Definition: Plyometric is a traditional form of resistance training emphasizing the loading of muscles during an eccentric muscle action, which is quickly followed by a bound concentric action. These exercises enable a muscle to reach maximum strength in as short a time as possible. Plyometric exercises are a quick, powerful movement using a pre-stretch or counter-movement, which involves the stretch-shortening cycle. The term stretch-shortening cycle is used in the physiology literature to describe activities such as running, jumping, or throwing and the term plyometric is used in the rehabilitation and conditioning literature to describe these activities when they are used in training to capitalize on the stretch-shortening cycle for maximizing force production or enhancing performance. Shooting accuracy is the act of attempting to score points by throwing the ball through the basket, methods varying with players and situations. Accuracy is defined as the ability to perform a task with precision.

MATERIALS AND METHODS:

The players who are playing basket ball at the college level will be screened for inclusion and exclusion criteria. After signing the consent form the Player will have a weekly schedule of the practice session.

Pre-test reading will include accuracy by S3P test.

An initial session for a verbal and visual demonstration of the upper extremity plyometric training will be given to the players.

Warm-up is done prior to a training session for ten minutes including:

Stretching of the upper limb and chest musculature and Specific ball shooting drills

Subjects will be randomly assigned into 2 equal groups:

1. Group A (Experimental group)
2. Group B (Control group)

Subjects will be required to complete 18 training sessions at a frequency of 3 sessions per week and for at least 48 hrs. rest between these sessions.

The shooting accuracy test measurement will be taken on a weekly basis.

Group A- Experimental Group

Method-

Subjects will be asked to perform a warm-up prior to the training session.

After the warm-up, they will be asked to perform the upper limb plyometric training.

The exercise will be performed using 3 sets of 10 repetitions with 4-second rest between each set.

After completion of the training session, the players will be asked to perform a cool-down session.

Plyometric Training Protocol	
Week	Sets X Repetition
1	3x10
2	3x10
3	3x11
4	3x12
5	4x10
6	4x11

Table: 1 – Plyometric Training Protocol

Exercises Included: Plyometric pushup, Upper body plyometric drill (e.g., Overhead throw, side throw, over back throw, slams, Explosive start throws, and Squat throw).

Group B Control Group: The control group will perform the exercise as per their exercise regime

Test Used: S3P Test Each player performs two jumps from five different positions, i.e., ten shots in total. The Player's starting position is on the right-wing. Shooting positions are set at a distance of six meters and twenty-five centimeters from the vertical projection of the hoop's center on the floor. There is no time limit for the shots. Two other players catch the ball and pass it back to the testee. There is a three-minute rest period between each shooting series.

Post Intervention both control and Experimental Groups will be tested for data collection. Pre and Post Data collected will be analyzed statistically by SPSS and excel.

RESULT:

The analysis of the mean and standard deviation (S.D) of the number of goals hit in 1st week for Group A (X=.20, SD=.414) mean and standard deviation (S.D) of the number of goals hit in 1st week for Group B (X=.13, SD=.352;). The analysis of the mean and standard deviation (S.D) of the number of goals hit in the 2nd week for Group A (X=.53, SD=.516) mean and standard deviation (S.D) of the number of goals hit in 2nd week for Group B (X=.13, SD=.352;). The analysis of mean and standard deviation (S.D) of the number of goals hit in the 3rd week for Group A (X=1.07, SD=.594) mean and standard deviation (S.D) of the number of goals hit in the 3rd week for Group B (X=.53, SD=.743). The analysis of the mean and standard deviation (S.D) of the number of goals hit in the 4th week for Group A (X=1.87, SD=1.125) mean and standard deviation (SD) of a number of goals hit in the 4th week for Group B (X=.53, SD=.516). The analysis of the mean and standard deviation (S. D) of the number of goals hit in the 5th week for Group A (X=2.27, SD=1.438) mean and standard deviation (S.D) of the number of goals hit in the 5th week for Group B (X=.67, SD=.816). The analysis of the mean and standard deviation (S.D) of the

number of goals hit in the 6th week for Group A ($X=2.60, SD=1.121$) mean and standard deviation (S.D) of the number of goals hit in the 6th weeks for Group B ($X=.87, SD=.640$).

The analysis data through correlation in Group A in (1st – 2nd) week correlation value = .468 ($p>.05$), (5th – 6th) week correlation value = .869 ($p<.05$). The analysis data through correlation in Group B in (1st – 2nd) week correlation value = -.154 ($p>.05$), (5th – 6th) week correlation value = .592 ($p<.05$). With f -value and p -value on pre (1st week) is $f=.475$ and ($p>0.05$) f -value and p -value after 6th week is 5.200 and ($p<0.05$) This shows that Group-A has shown significant improvement in hitting goal than that of Group B

SUMMARY AND CONCLUSION

A 6-week plyometric training program included plyometric push-up training and plyometric drills, with the help of a medicine ball (2kg) for boys within the 18 to 25 age group. This training significantly improved performance in the plyometric group as compared to the non-plyometric group. This finding demonstrates the necessity of a plyometric conditioning program for enhancing the performance of basketball players. In activities that involve acceleration, deceleration, and a change of direction. It may be hypothesized that plyometric training may be most likely to enhance accuracy performance in youth basketball players.

The results of this study also demonstrate that plyometric training is very much effective in basketball training for upper limb throwing accuracy.

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