

Comparative Effect of Specific Weight Training on the Performance of Lay-Up & Jump Shot

Dr. Suhel Raza*

*Assistant Professor, Department of Physical Education & Sports, PPN College, Kanpur
(Received 25 July 2014 – Accepted & Published 11 August 2014)

Abstract

Background: The purpose of this study was to find out the comparative effect of specific arm and leg strength training exercises on the performance of lay-up shot and jump shot.

Methods: The study was delimited to the 30 male basketball players belonging to the age group 18 to 25 years of LNIPE, Gwalior Basketball Match Practice Group and delimited to following training period of ten weeks specific weight training programme. Analysis of co-variance was used to find out the significant difference among the difference exercise group and the level of significance set as 0.05 level.

Results: The difference between the paired adjusted final means for Arm Strength, Leg Strength and Control Group in layup shot indicates significant value gain of 5.981 and 5.906 and in case of leg strength and control arm strength and control in significant value gain (0.75). The difference between the paired adjusted final means for Arm Strength, Leg Strength and Control Group in Jump shot indicates significant value gain of 2.363, 8.815 and 6.452 in case of arm strength and leg strength, arm strength and control, leg strength and control.

Conclusion: (a)Both training groups (leg strength and arm strength) improved lay-up shot performance but for these both arm strength and leg strength required equally (b)Leg Strength training programme is significantly better than arm strength training programme on the performance of jump shot.

Key words: Lay-up shot, Jump shot & Strength training

INTRODUCTION

Basketball was introduced in India some seventy years ago by the Y.M.C.A., Calcutta, after that Y.M.C.A. College of Physical Education which was started in 1920 at Madras played an important role in popularizing the game. But in India we are not able to make much head way as far as International Competition is concerned, because of lack of facilities and advance scientific coaching. The performance of Indian basketball players at the International level has been a great concern to the coaches, scientists and physical educationists. Efforts have been and are being made to improve the standard of our sportsmen, but little has been achieved in this respect (H.S. Sodhi and L.S. Sodhi 1984).

Shooting is probably the most attractive part of the game of basketball, players practice the skill for long periods of time without being prodded by the coach. It is an activity from which they derive enjoyment during the off season or even after a hard practice session is concluded. As a result, couple with better techniques of instruction shooting percentages have steadily climbed during the years. Basketball players are better shooters today, and they will continue to improve each year, because shooting is a skill that can be learnt. Coaches everywhere have

devised excellent method of instructing their players in this all important area and the results have been extremely rewarding (Jack Richard 1957).

The selection of strengthening exercises should be done according to aim, training state and nature of the competition activity. According to the competition activity, these exercises should be further subordinated to general, special and competition exercises and should be accordingly selected and used (Hardayal Singh1984).

Today, the jump shot is practically the standard shot used in basketball. The mobility of the coaching profession and the fact that basketball games are seen on television have tended to eliminate any regional differences in styles of play the might have existed in the past.

They lay up is probably the most important of all shots. It is shot that skilled players can ill effort to miss and with which beginning players can achieve reasonable success. Actually the Lay-up is the shot used when a player is close to the basket and often used to culminate a fast break (J.M. Cooper and Dary1975).

In executing the shot from the right side of the basket the player catches the ball as she steps on her right foot. She then steps left and jumps high into the air while carrying the ball high over head. The ball is held gently against the back board as the player follows through, towards the point of aim which is slightly higher and to be right of the basket. The follow through is completed as the player lands with ankles and knees flexed and is ready to rebound or go on defense (Mildred J. Barnes1980)

Objective

The purpose of this study was to find out the comparative effect of specific arm and leg strength training exercises on the performance of lay-up hot and jump shot.

METHODOLOGY

The study was delimited to the 30 male basketball players belonging to the age group 18 to 25 years of LNIPE, Gwalior Basketball Match Practice Group and delimited to following training period of ten weeks specific weight training programme. The study was further delimited to only two shooting techniques the jump shot and lay-up shot.

The pre test was conducted and on the basis of their performance and with the help of Equating Group Design, the three groups were formed (Group A, group B, Group C) each consisting of ten subjects. The groups were further assigned randomly to act as experimental I i.e. arm strengthening, experimental II i.e. leg strengthening and III as control group.

The total number of basketball converted out of 10 Lay up Shots from both side i.e. Right side and Left side was taken as the criterion measure for the study. Each subject was given 10 chances at each side. The test was taken at the beginning and after the ten weeks training period.

If a player was able to score a basket, he was awarded Two points and if he was able to touch the ring he was awarded one point and if he failed to touch the ring, then he was given a zero. So, likewise points of the individual was collected.

20 Chances was given to each subject to convert the basket with the performing jump shot. If a subject was to score a basket, he was awarded two points and if he was able to touch the ring he awarded one point on if he failed to touch the ring, then he was given a zero. So like wise points of the individual was collected.

Experimental Design

Group A were given the set of selected arm strengthening exercises, group B were given the set of selected leg strengthening exercises and group C worked as a control group.

This exercise programme was given for ten weeks period and again the same test i.e. post test was conducted.

Weight Training Exercises for Experiment

Arm and Shoulder Strength

The following weight training exercises were given:

1. Arm Curl
2. Reverse Arm Curl
3. Wrist Curl
4. Bent Arm Pull-over
5. Press Behind the Neck
6. Shoulder Press

Leg Strength

The following weight training exercises were given :

1. Heel Raise
2. Half Squat
3. Dead Lift
4. Straddle Lift
5. Striding
6. High Knee Action

A training programme of 10 weeks on alternate days, in the morning session i.e. 8.15 am. To 9.00 am. was administered to Group A and Group B. Group C was the control group who went through the normal playing schedule without doing any specific weight training exercises. The training load was increased progressively after every two weeks. These exercises with same load was repeated for thrice a week for a block of two weeks. The days were Monday, Wednesday and Friday.

Analysis of co-variance was used to find out the significant difference among the difference exercise group and the level of significance set as 0.05 level.

Table No. 1: Analysis of Co-Variance of the Mean of two Experimental Groups and the Control Group in Lay Up Shot

	Arm Strength	Leg Strength	Control Group	Sum of Square		df.	Mean sum of Square	F-Ratio
Pre-test Mean	22.5	25.2	21.9	A	61.80	2	30.90	2.08
				W	401.0	27	14.852	
Post Test Means	31.10	33.40	24.70	A	406.46	2	203.23	13.47
				W	407.40	27	15.089	

Adjusted Post Test Mean	31.68	31.752	25.77	A	222.27	2	111.13	21.38
				W	135.17	26	5.199	

* Significant at 0.05 level

i) F 0.05 (2.27) 3.35

ii) F 0.05 (2.26) 3.37

As shown table that Lay up shot for Arm Strength, Leg Strength Control Groups indicates insignificant F-ratio of 2.081 for the pre-test. This shows that the random assignment of the group was quite successful. However, the F-ratio for the post test mean, and adjusted post test means reveals a value of 13.469 and 21.377 which was significant for being greater than the required F-value at 0.05 level of significance. This indicates that there was significant difference from the adjusted post test means of Arm Strength, Leg Strength and Control Groups in Lay-up shot.

Table No. 1.1: Paired Adjusted Final Means and Difference between Means of Three Different Groups of Lay Up Shot in Basketball

Leg Strength	Arm Strength	Control Group	Mean Difference	Critical Difference
31.752	31.677		0.075	2.096
31.752		25.771	5.981*	2.096
	31.677	25.771	5.906*	2.096

Table 1.1 indicate that the difference between the paired adjusted final means for Arm Strength, Leg Strength and Control Group in lay up shot indicate significant value gain of 5.981 and 5.906 and in case of leg strength and control arm strength and control in significant value gain (0.75).

Table No. 2: Analysis of Co-Variance of the Mean of Two Experimental Groups and the Control Group in Jump Shot

	Leg Strength	Arm Strength	Control Group	Sum of Square		Df.	Mean sum of Square	F-Ratio
Pre-test Mean	20.9	22.1	23.4	A	31.267	2	15.633	1.302
				W	324.20	27	12.007	
Post Test Means	32.60	31.30	26.00	A	244.47	2	122.233	8.674*
				W	380.50	27	14.093	
Adjusted Post Test Mean	33.69	31.33	24.88	A	381.84	2	190.920	39.427*
				W	125.90	26	4.842	

* Significant at 0.05 level

i) F 0.05 (3.36) 2.86

ii) F 0.05 (3.35) 2.88

The table 2 of Jump Shot for Arm Strength, Leg Strength Control Groups indicates insignificant F-ratio of 1.302 for the pre test. This show that the random assignment of the group was quite successful. However the F-ratio for the post test mean, and adjusted post test means reveals a value of 8.674 and 39.427 which was significant for being greater than the required F-

value at 0.05 level of significance. This indicate that there was significant difference from the adjusted post test means of Arm Strength, Leg Strength and Control groups in Lay up shot.

Table No. 2.1: Paired Adjusted Final Means and Difference between Means of Three Different Groups of Jump Shot in Basketball

Leg Strength	Arm Strength	Control Group	Mean Difference	Critical Difference
33.693	31.33		2.363*	2.023
33.693		24.878	8.815*	2.023
	31.33	24.878	6.452*	2.023

Table 2.1 indicate that the difference between the paired adjusted final means for Arm Strength, Leg Strength and Control Group in Jump shot indicate significant value gain of 2.363, 8.815 and 6.452 in case of arm strength and leg strength, arm strength and control, leg strength and control.

Discussion of Findings

Results of the study revealed that both the training groups (leg strength and arm strength training group / improved lay up shot performance of basketball. Further the study also revealed that leg strength training. Proved to be equal to arm strength in the improvement of lay-up shot performance. This might be due to the reason that in the lay-up shot performance strength in both the body parts i.e. leg as well as arm required equally. It means that performance of lay-up shot depends on the involvement of leg and arm equally.

Results of the study revealed that leg strength training group improved jump shot performance of basketball players. Further the study also revealed that leg strength training proved to be superior than arm strength training in jump shot. This might be due to the reason that performance of jump shot depends on the jumping ability of the individual which required greater leg strength. Although arm strength is also required but leg strength is more significantly. As revealed by the study.

CONCLUSIONS

1. Both training groups (leg strength and arm strength) improved lay-up shot performance but for these both arm strength and leg strength required equally.
2. Leg Strength training programme is significantly better than arm strength training programme on the performance of jump shot.

References:

- Ambler, Vic. (1984) *Competitive Sports Series Basketball*, London : Ballford Academy and Educational.
- Ambler, Vic. (1984) *How to Play Basktbball*, Delhi : Zed Paperbacks.
- Andreasen, William Gunder. (1990)“The Effect of the Three Point Rule Change in College Basketball” *Dissertation Abstracts International*, 2826-A.
- Campbell, Robet L.(1962) “Effect of Supplemental Weight Training on the Physical Fitness of Athletic Squads”, *Research Quarterly* 33:3: 343-347.

- Charles, Gary L.(1967) “The Effect of Selected Explosive Weight Training Exercises Upon Leg Strength, Free Running, Speed and Explosive Power”, *Completed Research in Health, Physical Education and Recreation* 9 : 104.
- Gregor, John Gray,(1974) “The Effect of Progressive Weight Training Programme on the Performance of Swimming the 100 Yard Crawl Stroke of Male and Female Competitive Swimmers Between the Age of 10 and 16”, *Dissertation Abstracts International* 35: 869.
- Hanson, Leslie C. (1970) “The Effects of Three Selected Weight Training Programmes on Muscular Strength, Endurance Girth and Cardio-Vascular Endurance”, *Completed Research in Health, Physical Education and Recreation* 12: 205.
- Hey, John Philip, (1972) “The Effect of Weight Training Upon the Accuracy of Basketball Jump Shooting”, *Dissertation Abstracts International* 33 : 606-A.
- James, Gironard E. (1967) “The Effect of Practice Position on Accuracy in Goal Shooting in Basketball”, *Completed Research in Health, Physical Education and Recreation*, 9: 43.
- Paslyreal. (1969) *Coaching Methods for Women* California : Addison Wesley Publishing Company.
- Richard, Jack *Treasury of Basketball Drills from Top Coaches* Englewood Cliffs, N.J. : Prentice Hall, 1957.
- Singh, Hardayal. (1984) *Sports Training – General Theory and Methods*. Patiala : Phulkian Press.
- Sodhi, H.S. and Sodhi, L.S.(1984) *Physique and Selection of Sportsmen* Patiala : Punjab Publishing House.
- State, Oscar, (1960) *Weight Training for Athletics*, London : Amateur Athletic Association.