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## Effect of 12 weeks plyometric training on performance of basketball players

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### Abstract

The purpose of this study is to find out the effect of twelve weeks Plyometric Training on Performance of Basketball Players. To achieve the purpose 40 Male basketball players are selected randomly and the age group of the subject is ranged from 18-23 years. The subjects were divided into two equal groups of 20 each. The study was conducted on two groups of players. Group -I (n=20) called plyometric training group, and Group II (n=20) act as control group who have not taken part in any special training apart from regular basketball practice. After assigning the subjects into various groups the pre-test was conducted on the selected variables of Speed, agility, flexibility, explosive power, passing ability, dribbling ability, shooting ability. After completion of the pre-test, the subjects were trained with their respective training program. The training period was scheduled for Twelve weeks. Experimental Group-I (PTG) underwent a plyometric training programme, and control group-II (CG) did not practice any specific training. After 12 +weeks of the training period post test was conducted on the dependent variables of Speed, agility, flexibility, explosive power, passing ability, dribbling ability, shooting ability for the two groups. The analysis of covariance (T-TEST) was used to find out the significant differences if any, between the experimental group and control group on selected criterion variable. In all the cases, 0.05 level of confidence was fixed to test the significance, which was considered as an appropriate. The result of the present study has revealed that there was a significant difference among the experimental and control group on shooting performance.

**Results:** The Plyometric training group significantly improved in ( $P < 0.05$ ) the selected variables of speed, agility, explosive power, passing ability, dribbling ability and shooting ability better than the Control groups.

**Keywords:** speed, agility, explosive power, flexibility, passing ability, shooting ability, dribbling ability and basketball

### 1. Introduction

Basketball is one of the today's fastest team sports and is epitomized by grandiose Maneuvers such as the slam-dunk and blocked shot. In this game everyone should mastery over fundamental skills like Dribbling, passing, shooting, rebounding, defense etc. When one has mastered the fundamental skills of the games, he gets a feeling of wellbeing. High level of performance otherwise known as playing ability in basketball depends upon proficiency over the fundamental skills. High level of performance of a basketball player depends upon fundamental skills. It is recognized that among the fundamentals, ability to dribble the ball, ability to shoot, ability to passing, ability to rebounding, ability to shoot are of primary importance for high level of performance. How to shoot a basketball correctly is the most important skill you need to master in order to play the game. Using the right form helps you score more points, so take the time to learn how to shoot before you hit the court.

### 2. Methodology

The purpose of the study was to find out the effect of Plyometric training on Performance among Don Basco College Basketball players. To achieve the purpose of the study, 40 male basketball players were selected as subjects who were from the various departments in Donbasco institution, chitradurga, Karnataka. The selected students in the age of 18-23 years were chosen as sample for the study. The selected participants were divided into two groups. Group I underwent Plyometric training and group II act as control group.

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The experimental groups underwent twelve weeks of training in their particular workout. For this study dependent variable is Speed, agility, flexibility, explosive power, passing ability, dribbling ability, shooting ability. The data were collected at prior and immediately after the training period. The data was analysis by using standardized 't' test. And the level of significance set as 0.05.

**3. Experimental design**

In this study 40 Male basketball players were randomly divided into Two equal groups namely, experimental group -I called plyometric training group (n=20, PTG), and group II act as control group (n=20 CG) who have not taken part in any special training apart from the regular basketball practice. Each group consists of 20 subjects. The selected subjects were initially tested on the selected variables of agility, explosive power and passing ability. After the completion of the initial test, the subjects belonging to experimental Group-I were treated with their respective training programme for Twelve weeks. Experimental Group-I (PTG) underwent a plyometric training programme, Control group-IV (CG) did not practice any specific training. After Twelve weeks of the training period post test was conducted on the dependent variables of Speed, agility, flexibility, explosive power, passing ability, dribbling ability, shooting ability for all the Two groups.

**4. Selection of subjects**

The primary purpose of the present study was to know how far the basketball plyometric training would help the development of selected variables (agility, explosive power and passing ability) compared with the experimental and control group of players, with some intervening training methods. To achieve this purpose 40 male volunteered basketball players from Chitradurga district Don Bosco School participate in this study as their age ranged from 18-23 years.

**5. Selection of variables and tests**

The following test were chosen for testing variables. Speed was measured by using 50-yard dash; agility was measured by using Illinois Agility test. Flexibility was measure by sit and reach test, Explosive power

was measured by using medicine ball throw test and passing ability was measured by using Leilich push-pass test. Explosive jump was measured by using sargent vertical jump test, Skill performance was measured by using Johnson's dribbling test, AAPHERD Basketball Different shooting test, AAHPERD Basketball Passing ability test The chosen tests were highly standardized, appropriate and ideal to assess the selected variables.

**6. Training programme**

The specially designed plyometric training group programme was given to the experimental Group-I (PTG). This training comprised of strength Upper body and lower body pyometric training programme. Medicine ball throw, Ankle hops, Vertical jumps, Vertical jumps and rotations, Front obstacle jumps, Lateral obstacle jumps, Leg lunging, Single leg hops, Power skipping, repeated tuck jump, Alternate leg bounding and squat jump, jump training. These trainings were executed in the morning sessions only. In the evening sessions, basketball skills, drills practice training and game practice were adapted. The subjects in the Control group practiced their normal basketball game and their own conditioning and training programme without any interventions of any training programme.

**7. Statistical analyses**

To analyse the comparative treatment effects of training 't' ratio was used. To test the significance of the derived results, the alpha level was set at 0.05 level of confidence.

**8. Results of the study**

Analysis of covariance was applied to determine whether the training programmes produced significantly different improvements in agility, explosive power and passing ability among the plyometric training group, and control group. The analysis is presented in the following tables.

**9. Analysis of the Results**

The data collected before and after the training period on agility of plyometric training group, and control group was analyzed statistically and presented in table-1.

**Table 1:** significance of mean gains / losses between pre and post-test of plometric training group on selected performance variables and skill performance of don bosco institution chitradurga, male basketball players.

Variables	Pre test Mean± sd	Post test Mean± sd	M d	Std error mean	't'-value	Df	Sig
<b>Performance variables</b>							
Speed in seconds	8.22±0.56	6.68±0.45	1.54	0.11058	13.94	19	.000
Agility(in seconds)	17.75±0.89	16.31±0.55	1.44	0.12408	11.63	19	.000
Flexibility (in centimetres)	28.44±3.00	31.71±2.88	3.27	0.30667	10.66	19	.000
Upper body strength(in kilograms)	3.33±0.41	4.96±0.75	1.62	0.168162	9.68	19	.000
Leg explosive power (in centimetres)	35.00±0.85	40.07±1.34	5.07	0.23273	21.78	19	.000
<b>Skill performance variables</b>							
Passing ability(in points)	38.75±2.63	44.50±2.56	5.75	0.34698	16.57	19	.000
Dribbling ability(in seconds)	35.50±1.96	44.70±2.22	9.2	0.75254	12.22	19	.000
<b>Aahperd basketball shooting ability test</b>							
Front shot test15	19.50±0.88	27.85±1.59	8.35	0.40572	20.58	19	.000
Side shot test10+10=20×2=40 One side=10Another side=10	24.4±2.45	35.6±2.54	11.20	0.69434	16.13	19	.000
Foul shot test 20 shots 1 point given for each basket made	10.45±0.75	17.9±1.25	7.45	0.35891	20.75	19	.000
Under basket shot test 30 second no of under board shots done	11.05±2.08	19.15±1.53	8.10	0.34717	23.33	19	.000
Overall playing ability(in scores)	5.89±0.70	8.77±0.68	2.88	0.10911	26.41	19	.000

\* Significant at 0.05 level, Table value-2.09

Table-1 shows the changes made from pre to post-test in the performance and skill performance variables were: 1.54 sec(speed),1.44Secs (agility), 3.27cms (flexibility),1.62kgs (upper body strength), 5.07cms (leg explosive power),5.75

points (passing ability),9.2 (dribbling ability), 8.35 points (Front Shot Test) 11.20points (Side Shot Test) 7.45 points (Foul Shot) 8.10 points (Under Basket Shot Test) 2.88 Overall playing ability test.

Table also shows the obtained 't' values of pre to post-test Mean differences on performance and skill performance variables were: 13.94(speed), 11.63(agility), 10.66 (flexibility), 9.68 (upper body strength), 21.78 (Leg Explosive), 16.57 (Passing ability), 12.22 (Dribbling ability), and 20.58 (Front Shot Test), 16.13 (Side Shot Test), 20.75 (Foul Shot Test), 23.33 (Under Basket Shot Test), and 26.41 (Overall playing ability test).

The obtained 't' values were tested at 0.05 level of significance. Since the calculated 't' values were greater than

the table 't' value at 0.05 level for degrees of freedom 19. (Null hypothesis) was rejected at 0.05 levels of significance and formulated research hypothesis was accepted. Thus it was concluded that twelve weeks of plyometric training program showed significant improvement in speed, agility, flexibility, upper body strength, Leg Explosive power, passing ability, dribbling ability, shooting ability and overall playing ability, as the study the above remark can be given at 95% confidence.

**Table 2:** significance of mean gains / losses between pre and post-test of plometric training group on selected performance variables and skill performance of don bosco institution chitradurga, male basketball players.

Variables	Pre Test MEAN± SD	Post Test MEAN± SD	M D	Std. Error Mean	't'- Value	df	sig
<b>Performance Variables</b>							
Speed in seconds	8.15±0.55	8.05±0.50	0.10	0.0565	1.77	19	.092
Agility (in seconds)	18.45±0.76	18.41±0.77	0.04	0.02853	1.35	19	.193
Flexibility (in centimetres)	25.25±2.49	25.74±2.52	0.49	0.26232	1.87	19	.076
Upper body strength (in kilograms)	3.75±0.48	3.75±0.49	0.00	0.00595	0.25	19	.804
Leg Explosive power (in Centimetres)	36.85±0.95	36.91±0.95	0.06	0.3078	2.015	19	.058
<b>Skill performance Variables</b>							
Passing ability (in points)	37.20±4.33	37.15±3.34	0.05	0.24575	0.203	19	.841
Dribbling ability (in seconds)	35.30±3.18	35.60±3.29	-0.30	0.25236	-1.189	19	.249
<b>Aahperd Basketball Shooting Ability Test</b>							
Front Shot Test 15	18.30±1.52	18.50±1.98	-0.20	0.35982	-0.556	19	.585
Side Shot Test 10+10=20×2=40 One side=10 Another side=10	23.85±2.49	24.10±2.29	-0.25	0.37609	-0.665	19	.514
Foul Shot Test 20 shots 1 point given for each basket made	8.25±2.04	8.55±1.63	0.30	0.32525	-0.922	19	.368
Under Basket Shot Test 30 second no of under board shots done	9.25±1.77	9.50±1.84	-0.25	0.22798	-1.097	19	.287
Overall playing ability(in scores)	4.59±0.54	4.76±0.63	-0.17	0.08871	-1.877	19	.076

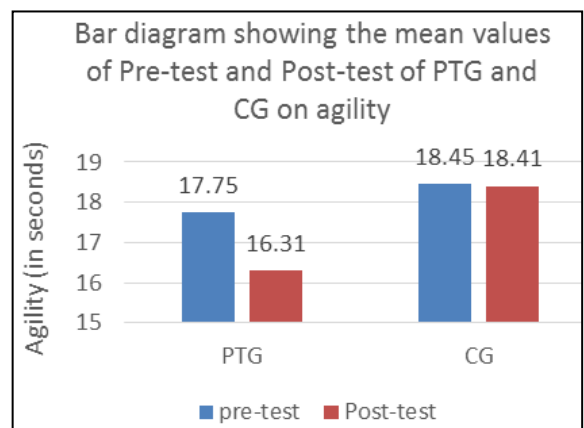
\*Significant at 0.05 level, and the Table value-2.09

Table-2 shows the changes made from pre to post-test in the performance and skill performance variables were: 0.10 sec(speed),0.04 Secs (agility), 0.49 cms (flexibility), 0.00kgs (upper body strength), 0.06 cms (leg explosive power), 0.05 points (passing ability), 0.30(dribbling ability), 0.20 points (Front Shot Test) 0.25 points (Side Shot Test) 0.30 points (Foul Shot) 0.25points (Under Basket Shot Test) 0.17 Overall playing ability test.

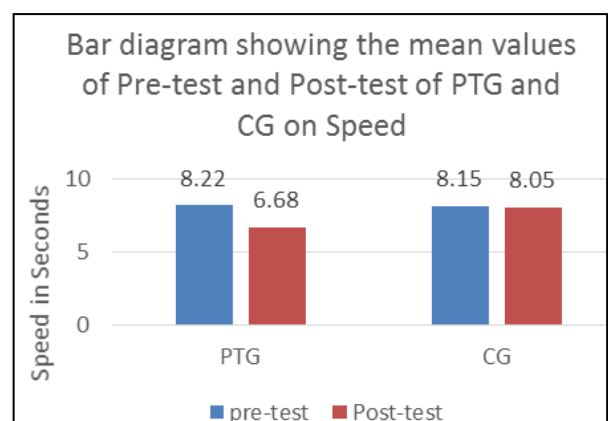
Table also shows the obtained 't' values of pre to post-test mean differences on performance and skill performance variables were: 1.77 (speed), 1.35(agility), 1.87 (flexibility), 0.25 (upper body strength), 2.015(Leg Explosive), 0.20(Passing ability), 1.18(Dribbling ability),0.55 (Front Shot Test), 0.66(Side Shot Test), 0.92 (Foul Shot Test), 1.09 (Under Basket Shot Test), and 1.87(Overall playing ability test).

The obtained 't' values were tested at 0.05 level of significance. Since the calculated 't' values of performance variables were lesser than the table 't' value at 0.05 level for Degrees of freedom 19. (Null hypothesis) was accepted at 0.05 levels of significance and formulated research hypothesis was rejected. Thus it was concluded that control group showed significantly no improved in passing ability, dribbling ability, shooting ability and overall playing ability.

Graphical representation of pre-test and post-test means of Resistance training group (RTG) Plyometric training group (PTG), Combined training group (CTG), Control group (CG) on Speed, agility, flexibility, upper body strength, leg explosive power, passing ability, dribbling ability, shooting ability and overall playing ability are presented in the following Figure 01 to 12 respectively.



**Fig 1**



**Fig 2**

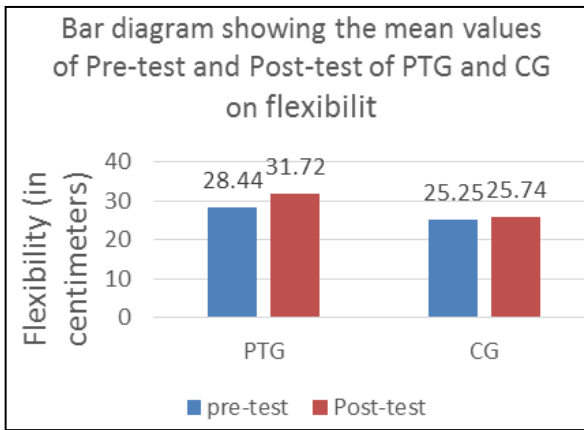


Fig 3

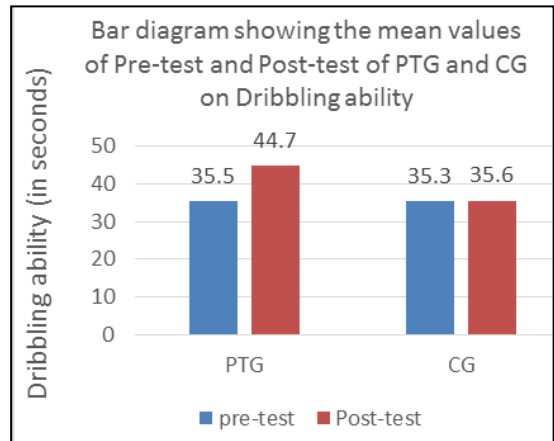


Fig 7

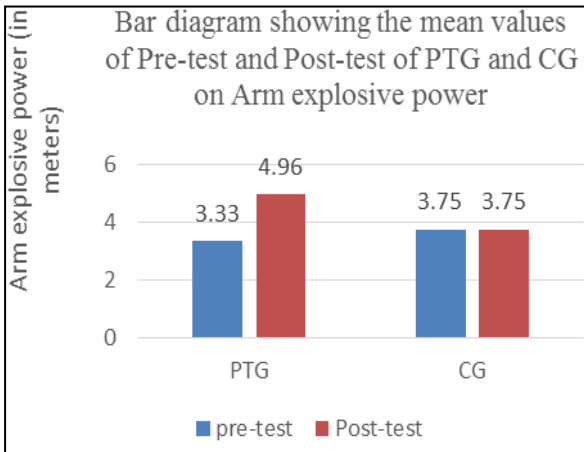


Fig 4

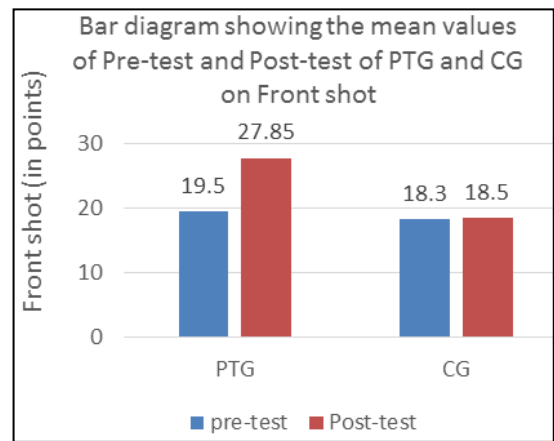


Fig 8

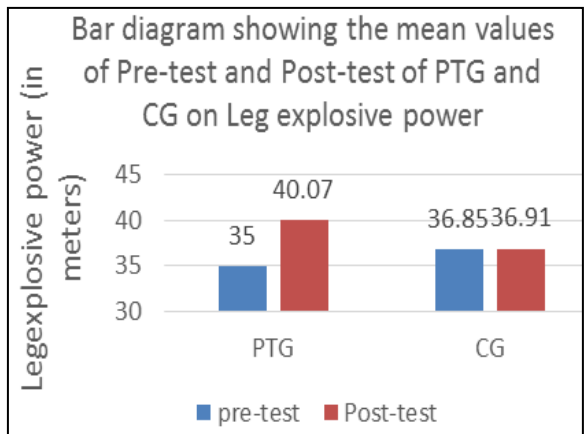


Fig 5

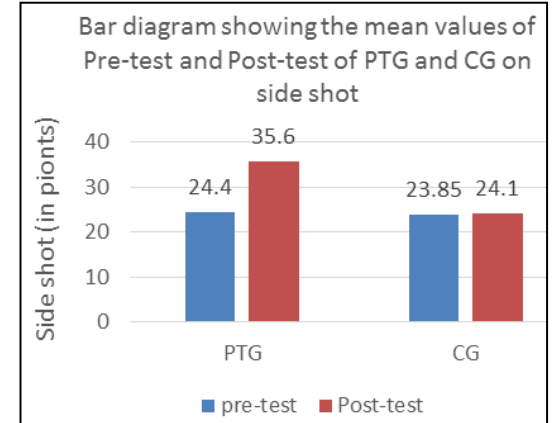


Fig 9

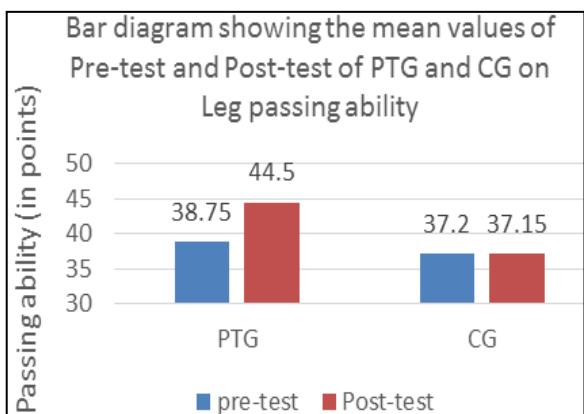


Fig 6

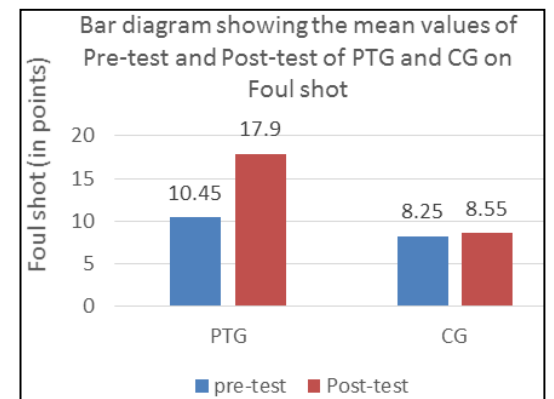


Fig 10

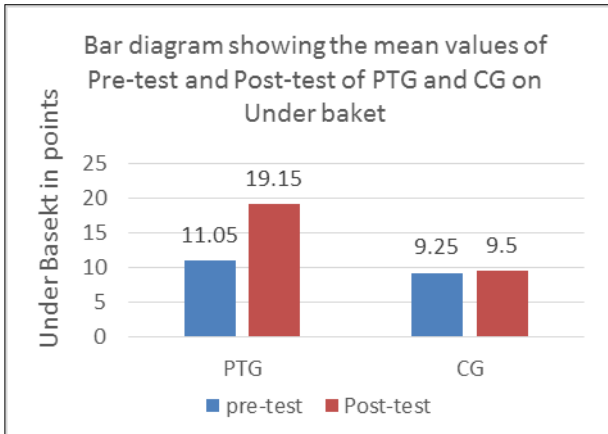


Fig 11

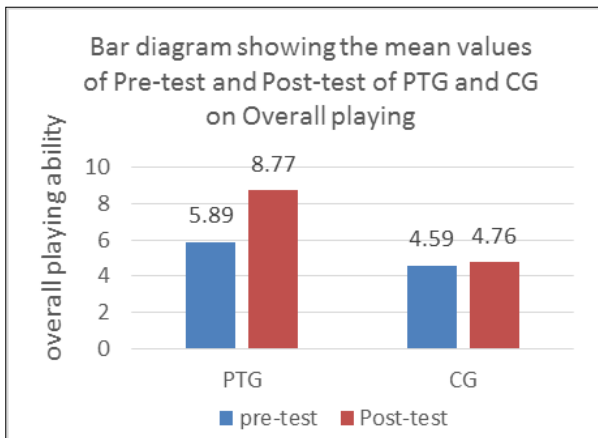


Fig 12

**Discussion/conclusions**

The results of the study proved that there were significant differences between Plyometric training group and control group. The twelve weeks of experimental treatment significantly influence on Playing performance in college students. Based on the results it was concluded that the implication of Plyometric training programme specific to the basketball game might have been the source of its dominance on the improvement of speed, agility, explosive power and passing, dribbling and shooting ability of the basketball players.

**Recommendations**

- It was recommended that adequate steps may be taken to include Plyometric training in the physical education curriculum as these exercises significantly improves the shooting performance of the subjects.
- Similar study may be undertaken and its influence on psychological and biochemical parameters may be assessed.

**References**

1. Fleck, Kraemer. Designing resistance training programs. Champaign, IL: Human Kinetics, 1997.
2. Stone Nick. Physiology response to sports specific aerobic interval training in high school male basketball players. School of Sports and recreation AUT University, 2007.
3. Monsef Cherif, Mohamed MD. The Effect of a Combined High-Intensity resistance and Speed Training Program, 2012.