

## EFFECT OF SELECTED PLYOMETRIC EXERCISES FOR DEVELOPMENT OF ARM MUSCULAR STRENGTH AND POWER OF SHOT PUT ATHLETE

Dyneshwar Gadakh  
Research Scholar,  
Dr. B.A.M. University, Aurangabad.

### ABSTRACT:

The purpose of the present study to find out the effect of selected plyometric exercises for development of muscular strength and power of Shot Put athlete. The sample for the present study consists of 20 male state level Shot Put athlete whose are practiced during State coaching camp. The subject are divided in two group i.e. control group (N=10) and experimental group (N=10) between the age group of 18 to 25 years. Plyometric exercises such as Medicine ball overhead throws, medicine ball side throws, medicine ball over back toss, medicine ball chest pass, medicine ball incline chest pass, medicine ball vertical toss, medicine ball catch and throw backhand, medicine ball power drop, plyometric push-ups etc. were given three times a week for eight weeks for experimental group and controlled group were given regular kayaking practice. To assess the arm muscular strength and power of shot put players to push up strength and Medicine ball throw power test. This study shows that due to the plyometric exercises there is a significant improvement of experimental group in the arm muscular strength and arm muscular power of kayaking players.

**KEYWORDS :** Plyometric exercises, arm muscular strength, arm muscular power, state level and kayaking players.

### INTRODUCTION

Athletics is the most popular water sports. The research was designed to assist with the development of coastal safety campaigns and sport persons high performance. Sport training is a systematic process spreading over a long period. For best result the system of training has to be based and conducted on scientific facts and lines where it is not probable to do that, the training has to be based on the results successful practice which has withstood the test of time sport. Physical training aims at improving the performance of sports persons. The sports performance depends on several factors. The performance of sports primarily depends on his performance capacity, such as

speed, strength and endurance. All these factors therefore are the principle aims of physical training. Sport training is a physical, technical, moral and intellectual participation of with the help of physical exercises. It is a planned process for the participation of athlete and players to achieve top-level performance.

Plyometric training refers to exercises that enable a muscle to reach maximal strength in as short a time as possible. Such exercise usually involves some form of jumping, but other modes of exercise exist. The elements ply and metric come from Latin roots for ‘increase’ and ‘measure’, ‘respectively; the combination thus means “measurable increase”. Plyometric exercise utilizes the force of gravity to store energy in the muscles. This energy is then utilized immediately in an opposite reaction, so the natural elastic properties of the muscle will produce kinetic energy to sports persons.

#### METHODS AND PROCEDURES

The sample for the present study consists of twenty state level Shot Put players from state athlete, were randomly selected as the subject of the study and age group of 18 to 25 years. Arm muscular strength and power was selected as a dependent variable and plyometric exercise were considered as independent variables. Plyometric exercises such as Medicine ball overhead throws, medicine ball side throws, medicine ball over back toss, medicine ball chest pass, medicine ball incline chest pass, medicine ball vertical toss, medicine ball catch and throw backhand, medicine ball power drop, plyometric push-ups etc. were given three times a week for eight weeks (45 min/day) for experimental group and controlled group were given regular kayaking practice. A pilot study was conducted before the investigation. The pre and post tests for both groups were collected from standardized test of push up and medicine ball throw for data was analyzed to find the t-ratio for significance result. Standard statistical packages were used to analyse the data.

**Table-1**

Sr. No.	Variable	Test	Measuring Unit
1.	Arm Muscular Strength	Push up	Number
2.	Arm Muscular Power	Medicine ball throw	Meter

#### STATISTICAL ANALYSES

Student’s t-test for independent data was used to assess the between-group differences. The

level of  $p \leq 0.01$  was considered significant.

## RESULT AND DISCUSSION

The study shows that due to the plyometric exercises there is improvement of experimental group in the arm muscular strength, arm muscular power and controlled group has low improvement in arm muscular strength and arm muscular power due to the regular practice. It is recommended that the plyometric exercises are admirable to improve the arm muscular strength and power of kayaking players. The finding pertaining to the data are presented in the table 2.

Table – 2

Pre and Post test means and standard deviations of arm muscular strength and arm muscular power scores of experimental group and control group.

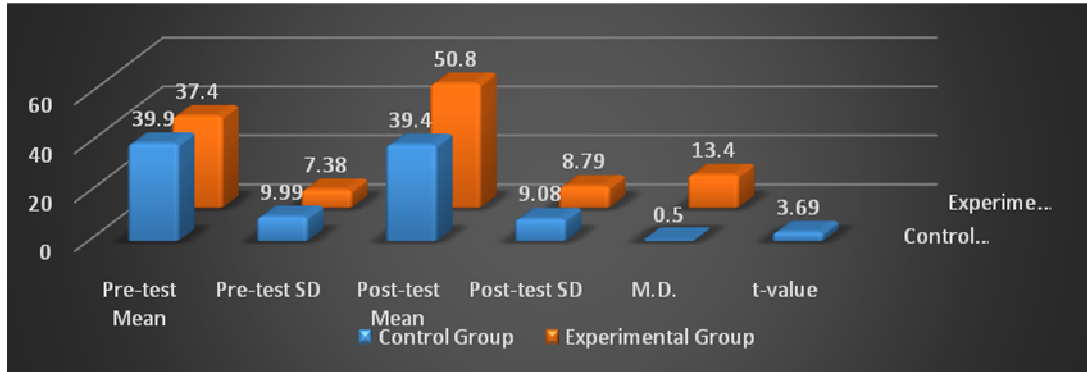
Sr. No	Variable	Group	Pre-test Mean±SD	Post-test Mean±SD	M.D	t-value
1.	Arm Muscular Strength	Control	39.9±9.99	39.4±9.08	0.5	3.69
		Experimental	37.4±7.38	50.8±8.79	13.4	
2.	Arm Muscular Power	Control	4.04±0.98	4.14±1.05	0.10	3.78
		Experimental	3.63±0.71	4.87±0.75	1.24	

\*Significant at 0.01 level

## ARM MUSCULAR STRENGTH

Table-2 presents the results of arm muscular strength of subjects shows the pre and post-test Mean and SD values of control group of 39.9±9.99 and 39.4±9.08 and experimental group pre and post-test mean and SD of respectively 37.4±7.38 and 50.8±8.79 was significant initiate. The t-value 3.69 as shown in the table above was found statistically significant ( $P < .05$ ). It has been observed that plyometric training have significantly enhanced for arm muscular strength. The pre test and post test of mean, standard deviation, mean differences and t-value of experimental group and control group in arm muscular strength measured by push up test. It is evident that is a considerable difference in the pre and post test means of arm muscular strength and among the experimental group and control group and very merger difference between the pre and post test means of control group. The graphical representation of responses has been exhibited in figure-1.

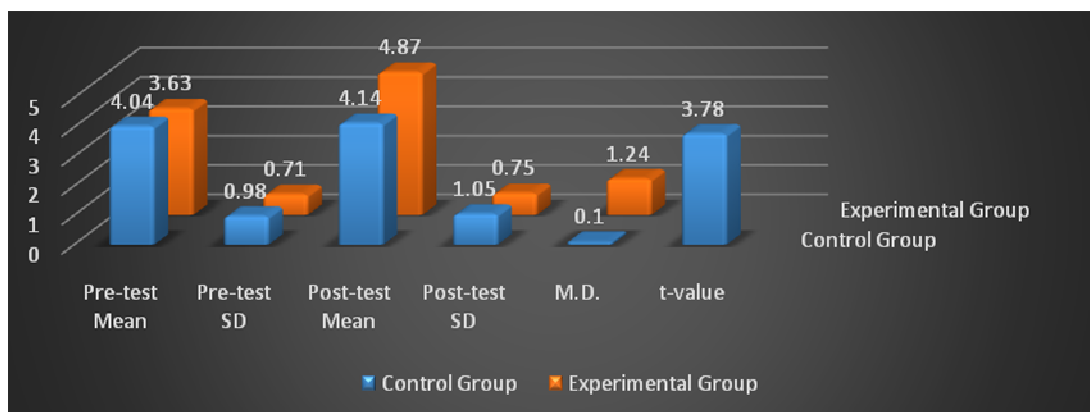
Figure 1: Graphical representation of data pre-test and post-test on arm muscular strength



### ARM MUSCULAR POWER

Table-2 presents the results of arm muscular power of subjects shows the pre and post-test Mean and SD values of control group of  $4.04 \pm 0.98$  and  $4.14 \pm 1.05$  and experimental group pre and post-test mean and SD of respectively  $3.63 \pm 0.71$  and  $4.87 \pm 0.75$  was significant initiate. The t-value 3.78 as shown in the table above was found statistically significant ( $P < .05$ ). It has been observed that plyometric training have significantly enhanced for arm muscular power. The pre test and post test of mean, standard deviation, mean differences and t-value of experimental group and control group in arm muscular power measured by medicine ball throw test. It is evident that is a considerable difference in the pre and post test means of arm muscular power and among the experimental group and control group and very merger difference between the pre and post test means of control group. The graphical representation of responses has been exhibited in figure-2

Figure 2: Graphical representation of data pre-test and post-test on arm muscular power



## CONCLUSIONS

It is concluded that due to the plyometric exercises there is a significant improvement of the arm muscular strength and arm muscular power of kayaking players.

## REFERENCES

1. Hardayal Singh (1991) “Science of Sports Training”, New Delhi: D.V.S. Publications, P.156.
2. Donald A Chu, (1992) “Jumping in plyometric, human Kinetics” publishers, Gambetta. 25 - 101.
3. Baechle Thomas R. (1994) “Essential of Sports Training and Conditioning”, Champaign, Illinois: Human Kinetics Publishers, p.95.
4. Chu, D.(1998) “Jumping into plyometric, Champaign, IL: Human kinetics”, P. 95-97.
5. Bompa, Tudor O., Periodization,(1999)”Theory and Methodology of Training”,Champaign, Illinois: Human Kinetics Publishers, p.133.
6. Uppal A.K, (2004) “Physical Fitness and wellness” New Delhi: friends Publications.
7. Edward M. Winter (2007)”Sport and exercise physiology testing guidelines”, New York: Routledge Taylor and Francis group publisher, p.131.
8. Solanikidis K., Zaferiridis A., (2008) “A effect of plyometric Tennis drills and combined training reaction lactoral and linear speed, power and strength Novice Tennis players” Journal of Strength conditioning research; PP.182-191.
9. Spurs, R.W., Murphy, A.J. and Watford, M.L., (2003) “The effect of plyometric training on distance running performance”, European journal of applied physiology,89:1.
10. Baechle Thomas R., (Ed), (1994) “Essentials of strength training and conditioning”, Champion, Illinois human kinetic, P. 325.
11. Chu.D. and L. Plummer (1984) “Jumping into plyometric, the language of plyometric”, USCA journal 6(5):30-31.