

**EFFECT OF JUMPING ABC DRILLS ASSOCIATED WITH PLYOMETRICS
TRAINING ON HORIZONTAL EXPLOSIVE POWER AND
PERFORMANCE VARIABLE AMONG COLLEGE
STUDENTS**

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ABSTRACT

The purpose of the study was to find out the effect of jumping ABC drills associated with plyometrics Training on standing broad jump and performance variables among long jumpers. Twenty four female students studying from Dr. Sivanthi Aditanar College of Physical Education, Tiruchendur were selected randomly as subjects. The age of the subjects ranged from 21 to 26 years. The selected subjects were divided into two groups. Group I underwent jumping ABC drills associated with plyometrics training and Group II acted as control. The experimental group was subjected to the jumping ABC drills associated with plyometrics training for alternative three days per week up to six weeks. The jumping ABC drills associated with plyometrics training was selected as independent variable and the criterion variables horizontal explosive power and performance variable were selected as dependent variables and the selected dependent variables were assessed by the standardized test items. Horizontal explosive power was assessed by standing broad jump and the unit of measurement in meters, and performance variable was assessed by long jump performance and the unit of measurement in meters. The experimental design selected for this study was pre and post test randomized design. The data were collected from each subject before and after the training period and statistically analyzed by using dependent 't' test and analysis of covariance (ANCOVA). It was found that there was a significant improvement and significant different exist due to the effect of jumping ABC drills associated with plyometrics training on horizontal explosive power and performance variables among college students when compared to control group.

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INTRODUCTION

Jumping is the transfer of weight from one or both feet. A jump can be divided into three parts: take off, flight and landing. Landing safely is an important skill to focus on when learning to *jump, leap or hop*. Jumping distance (horizontal jumps) is important in sport (e.g. athletics, long and triple jump) and in other games and activities (e.g. elastics). Jumping for height (vertical jumping) is used in many sports (e.g. high jump, basketball rebound, rugby line – out, vaulting in gymnastics) and in many playground games and activities (e.g. using skipping rope).

Plyometrics also known as “*jumping training*” or “plyos, are exercises based around having *muscles* exert maximum force in as short a time as possible, with the goal of increasing both speed and power. This training focuses on learning to move from muscle *extension* to a *contraction* in a rapid or “explosive” way, for example with specialized repeat jumping. **(Donald Chu, 1998).**

The term plyometrics was coined by ***Fred Wilt*** after watching soviet athletes prepare for their event in track and field. He felt this was a key to their success. **(Fred Willt & Michael Yessis, 1984).**

Fred Wilt a former US Olympic long distance runner, is credited with coining the term pyometrics. He admits that it is not a very good term but it was the best he could come up with after watching the Russians execute jumps in their warm – ups prior to their event in track and field. **(Fred Willt & Michael Yessis, 1984).**

Plyometric training conditions the body with dynamic resistance exercise that rapidly stretch a muscle (eccentric phase) and then rapidly shorten it (concentric phase). Hopping and jumping exercise, for example, subject the quadriceps to a stretch – shortening cycle that can strengthen these muscles, increase vertical jump, and reduce the force of impact on the joints.

METHODOLOGY

To achieve the purpose, twenty four women students studying from Dr. Sivanthi Aditanar College of Physical Education, Tiruchendur were selected randomly as subjects. The age of the subjects ranged from 21 to 25 years. They were assigned randomly into two groups (group I) underwent Jumping ABC drills associated with plyometrics training and (group II) acted as control of twelve subjects

each. The experimental group was subjected to the training during morning hours for alternative three days for six weeks and group II acted as control. The Jumping ABC drills associated with plyometrics training was selected as independent variable and the criterion variables horizontal explosive power and performance variable were selected as dependent variables and the selected dependent variable were assessed by the standardized test items. Horizontal explosive power was assessed by standing broad jump and the unit of measurement in meters, and performance variable was assessed by long jump performance and the unit of measurement in meters and the resting heart rate was assessed by radial pulse rate and the unit of measurement in numbers. The experimental design selected for this study was pre and post test randomized design. The data were collected from each subject before and after the training period and statistically analyzed by using dependent 't' test and analysis of covariance (ANCOVA).

RESULTS AND DISCUSSIONS

The data pertaining to the variables in this study were examined by using dependent 't' test to find out the significant improvement and analysis of covariance (ANCOVA) for each variables separately in order to determine the difference and tested at .05 level of significance. The analysis of dependent 't' test on data obtained for horizontal explosive power and performance variable of the pre test and post test means of experimental and control group have been analyzed and presented in Table I.

TABLE- I
MEAN AND DEPENDENT 't' TEST OF EXPERIMENTAL AND CONTROL GROUPS ON SELECTED VARIABLES

Variables	Mean	Jumping ABC drills Associated with Plyometric Training Group	Control Group
Horizontal Explosive Power	Pre test Mean	2.16	2.16
	Post test Mean	2.20	2.16
	't' test	3.31*	1.48
Performance	Pre test Mean	3.77	3.70
	Post test Mean	3.90	3.69
	't' test	4.85*	1.48

*Significant at 0.05 level of confidence (11) = 2.201

The obtained 't' ratio value of experimental group is higher than the table value, it is understood that running ABC drills associated with plyometric training had significantly improved the performance of horizontal explosive power and performance. However, the control group has no significant improvement as the obtained 't' value is less than the table value; because it was not subjected to any specific training. The analysis of covariance on the data obtained on horizontal explosive power and performance due to the effect of running ABC drills associated with plyometric training and control groups have been analysed and presented in Table II.

TABLE- II
ANALYSIS OF COVARIANCE OF EXPERIMENTAL AND CONTROL GROUPS ON SELECTED VARIABLES

Variables	Adjusted Post Test Means		Source of Variance	SS	df	Mean Squares	'F'-Ratio
	Running ABC Drills Associated with Plyometric Training	Control Group					
Horizontal Explosive Power	2.20	2.16	Between	0.014	1	0.014	20.81*
			Within	0.014	21	0.001	
Performance	3.85	3.84	Between	0.076	1	0.076	20.27*
			Within	0.079	21	0.005	

*Significant at .05 level of confidence, df (1, 21) = 4.32

Table II shows that the obtained 'F' ratio value are 20.81, 20.27 which are higher than the table value 4.32 with df 1 and 21 required to be significant at 0.05 level. Since the obtained value of 'F' ratio is higher than the table value, it indicates that there is significant difference among the adjusted post- test means of jumping ABC drills associated with plyometric training and control group on horizontal explosive power and performance.

To the most sports people, jumping ABC drills associated with plyometric training offered a better method of developing horizontal explosive power and performance. The present study also produced the same result.

CONCLUSIONS

1. The jumping ABC drills associated with plyometric training had significantly improved the horizontal explosive power and performance.
2. There was significant difference among the adjusted post – test means of jumping ABC drills associated with plyometric training and control group on horizontal explosive power and performance.

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