



Effect of Plyometric Training on selected Physical and Psychological Variables Among the Male Academic Respondents in Tiruchirappalli

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ABSTRACT

The study was carried out to identify the effect of Plyometric training on selected physical and psychological variables among the male academic respondents in tiruchirappalli.

Materials and Methods: To achieve the purpose of the study, thirty male respondents were selected from Rock fort Star Athletic Academic in Trichy district, Tamilnadu state. The age ranged between 18 to 23 years. The subjects (N=30) were randomly selected and divided into two groups. The experimental group (N=15) underwent plyometric training during morning hours weekly three days over six weeks. The control group (N=15) was left out from the training. The criterion variables selected for this study were physical variable as Explosive Power and psychological variables such as Aggression. The following standardized test items and questionnaire were used to assess the dependent physical variable such as Vertical Jump and psychological variables such as Smith aggression.

Results: The data were collected before and the after experimental period. The data pertaining to the variable for this study were examined by using analysis covariance (ANCOVA). The level of confidence was fixed at 0.05 levels for all the cases.

Conclusions: The result of the study revealed that there was a significant improvement on selected physical variables such as standing board jump and psychological variable such as smith aggression level decrease to improve the higher level of performance of experimental group due to the influence of plyometric training when compared to control group of criterion variables.

Keywords: Plyometric training, Standing board Jump , Smith Aggression and ANCOVA.

I. Introduction

Sports training refers to specialized strategies and methods of exercise used in various sports to develop athletes and prepare them for performance in sporting events. Sports today are highly competitive. There is a very thin margin between a winner and a loser. It defines as a pedagogical process, based on scientific principles, aiming at preparing sports persons and non-sports persons to strive for higher performance in sports competition and attain the best possible fitness (**Tarun Routhan**).

Plyometrics is a type of exercise training that uses the speed and force of different movements to build muscle power. Plyometrics training can improve your physical performance and ability to do different activities. Plyometrics can include different types of exercises, like push - ups, throwing, running, jumping, and kicking. Athletes often use plyometrics as part of their training, but anyone can do these workouts. People who are in physical rehab after an accident or injury use plyometrics to get back into good shape and physical function. Plyometrics means "plyo," it's to be called "jump training." It's a technique you can use in many different ways. For instance, you can do plyometrics to help train for basketball, volleyball, tennis, or any other activity that uses explosive movements. Plyometric exercise is a technique that includes specific exercise that encompass a rapid stretch of muscle eccentrically, followed immediately by a rapid concentric contraction of that muscles for the purpose of facilitation and developing a forceful; explosive movement over a short period of time. The greater the stretch put on the muscle from its resting length immediately before the concentric contraction, the greater the resistance the muscle can overcome. Plyometric exercise emphasize the speed of the eccentric phase (**Sinku Kumar Singh**)

II. Materials and Methods

The study was carried out to identify the effect of plyometric training on selected physical and psychological variables among the academic respondents in trichy.

Selection of the respondents: To achieve the purpose of the study, thirty male respondents were selected from Rock fort Star Athletic Academic in Trichy district, Tamilnadu state. The age ranged between 18 to 23 years.

Sample Size and design: The subjects (N=30) were randomly selected and divided into two groups. The experimental group (N=15) underwent plyometric training during morning hours weekly three days over six weeks. The control group (N=15) was left out from the training.

Selection of variable

s: The criterion variables selected for this study were physical variable such as explosive power and psychological variables such as smith aggression. The following standardized test items and questionnaire were used to assess the dependent physical variable such as standing board jump and psychological variables such as Smith Aggression.

III. Result (Statistical and Interpretation of the data):

The data were collected before and the after experimental period. The data pertaining to the variable for this study were examined by using dependent t-test and analysis covariance (ANCOVA). The level of confidence was fixed at 0.05 levels for all the cases.

TABLE-I

THE SUMMARY OF MEAN VALUE FOR THE PRE AND POST OF STANDING BROAD JUMP OF EXPERIMENTAL AND CONTROL GROUP

Group	Number	Mean	
		Pre test	Post test
Experimental group	15	2.30	2.35
Control group	15	2.14	2.13

Table -I indicate that the experimental group of pre test mean value is 2.30 and post test value is 2.35 and control group of pre and post mean value is 2.14 and 2.13 respectively. Hence, it is understood that Plyometric training group were significant difference between the mean score of pre and post test of Standing Board jump.

TABLE-II

ANALYSIS OF COVARIANCE ON STANDING BOARD JUMP OF CONTROL AND EXPERIMENTAL GROUP

Variable	Adjusted post test mean		Sum of square	Source of variance	df	Mean square	F-ratio
	Experimental group	Control group					
Standing Board Jump	2.35	2.30	Between	0.34	1	0.14	5.50*
			Within	0.01	27	0.0042	

*Significant at 0.05 level (The table value required for significance at 0.05 level with df 1 and 27 is 4.28)

It is observed from the above table that the adjusted post-test means of experimental and control groups were 2.35 and 2.30 respectively. The obtained 'F' ratio value of adjusted post means of the experimental and control group on standing broad jump was 5.50 which is higher than the table value of 4.28 with 1 and 27 at 0.05 levels of confidence. Since the

obtained 'F' value is higher than the table value, it indicates that there existed a significant difference in standing broad jump between the experimental and control groups. Hence it is inferred that the experimental group which underwent plyometric training had significantly improved the standing broad jump.

TABLE - III

**GRAPHICAL REPRESENTATION FOR PRE AND POST TEST OF
EXPERIMENTAL GROUP MEAN VALUE OF
STANDING BROAD JUMP**

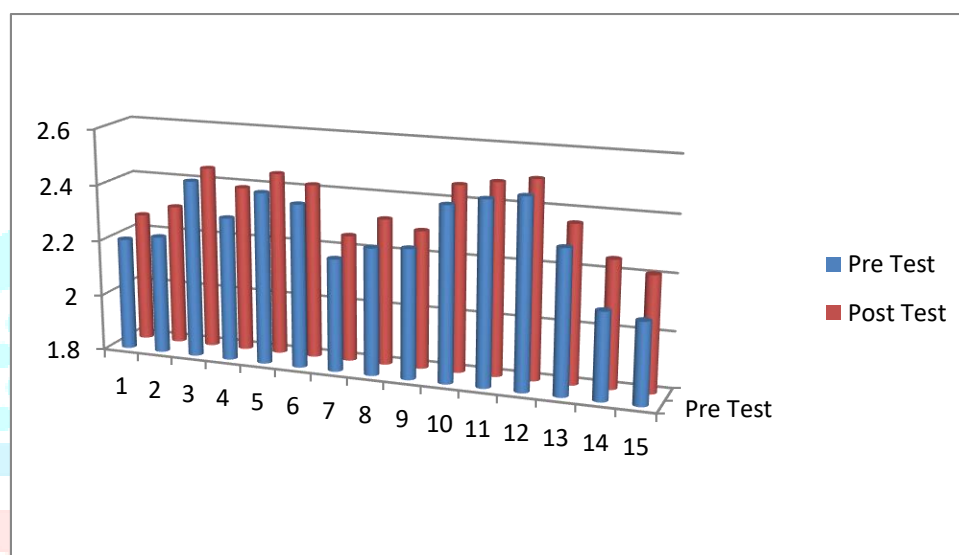


TABLE-IV

**THE SUMMARY OF MEAN VALUE FOR THE PRE AND POST OF
SMITHAGGRESSION OF EXPERIMENTAL
AND CONTROL GROUP**

Group	Number	Mean	
		Pre test	Post test
Experimental group	15	14.93	11.73
Control group	15	14.46	14.66

Table -I indicate that the experimental group of pre and post test mean value is 14.93 and post test value is 11.73 and control group of pre and post mean value is 14.46 and 14.66 respectively. Hence, it is understood that Plyometric training group had significant difference between the mean score of pre and post test of Smith aggression.

TABLE-V

**ANALYSIS OF COVARIANCE ON SMITH AGGRESSION
OF CONTROL AND EXPERIMENTAL GROUP**

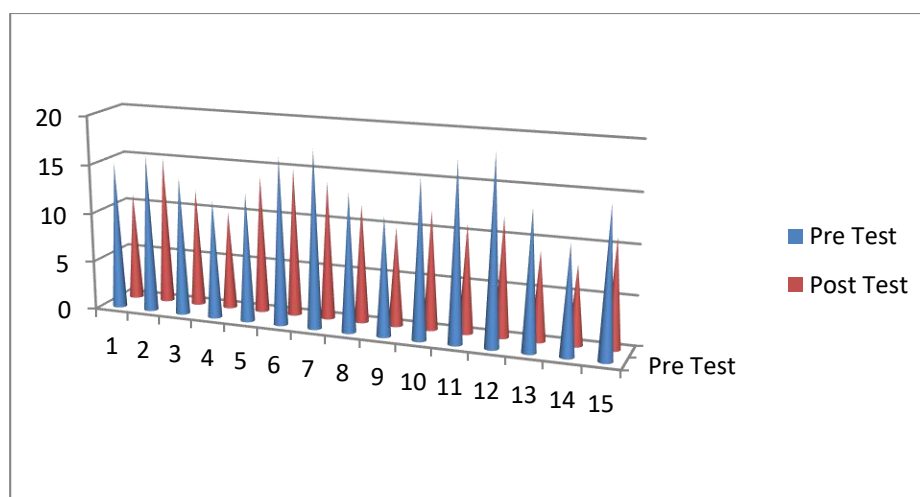
Variable	Adjusted post test mean		Sum of square	Source of variance	df	Mean square	F-ratio
	Experimental group	Control group					
Smith Aggression	11.73	14.66	Between	174.965	1	174.965	3.89*
			Within	1632.368	27	60.458	

*Significant at 0.05 level (The table value required for significance at 0.05 level with df 1 and 27 is 4.28)

It is observed from the above table that the adjusted post test means of experimental 11.73 and control groups 14.66 were respectively. The obtained 'F' ratio value of 3.89 adjusted post means of the experimental and control group on smith aggression was which is lesser than the table value of 4.28 with 1 and 27 at 0.05 levels of confidence. Since the obtained 'F' value is lesser than the table value, it indicates that there existed a significant difference in smith aggression between the experimental and control groups. Hence it is inferred that the experimental group which underwent plyometric training had significantly decreased the level of Smith Aggression.

TABLE - VI

**GRAPHICAL REPRESENTATION FOR PRE AND POST TEST OF
EXPERIMENTAL GROUP MEAN VALUE
OF SMITH AGGRESSION**



IV. Discussion on Findings:

Training of loaded plyometric exercises is that they increase the overall force with which the exercise is performed. It enhance the positive effect of the exercise and further increase the practitioner's ability to apply explosive power. **Ayyappan and Ashok Kumar.,(2020)** has significant difference on selected physical fitness and psychological variables between the plyometric and control group. **Saroja & Vijayalakshmi., (2020)** plyometric training had positive impact on psychological variables among the basketball women players. **Manimaran & Ramesh., (2017)** The process of muscle lengthening after the rapid shortening during stretch-shortening cycle is integral to plyometric exercise (**Chu Donald 2013**) .Plyometric is a type of exercise training designed to produce fast, powerful movements, and improve the functions of the nervous system, generally for the purpose of improving performance in sports. **S Sivakumar and AS Logeswaran.,(2017)** The plyometric training group has showed better performance on HDL and LDL than the control group. The result of the study revealed that there was a significant improvement on selected physical variables and psychological variables among the male academic respondents when compare to control group.

V. Conclusions:

The result of the study revealed that there was a significant improvement on selected physical variables such as standing board jump and psychological variable such as smith aggression level decrease to improve the higher level of performance of experimental group due to the influence of plyometric training when compared to control group of criterion variables.

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