



# EFFECT OF PLYOMETRIC EXERCISES WITH SKILL ORIENTED EXERCISES ON AGILITY OF REGULAR PRACTICING BADMINTON PLAYERS

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**Abstract:** Badminton is one of the fastest popular games in various corner of the world. The intensity of the game needs various motor fitness components; one of them is the agility. The main purpose of the study was to analyze the effect of plyometric exercises with skill oriented exercises on the agility of badminton players. The study was carried out with 50 badminton players, 25 experimental and 25 control group from northeast region between the age group of 18 to 25 years. Twelve (12) weeks of training program was employed to the experimental group only. Semo Agility test was used as a tool to collect and analyze data before and immediately after completion of 12 weeks of training program. Jamovi 2.0.0.0 version software was used to examine the data, to test the hypothesis dependent t test and ANCOVA for the main effect was employed; the level of significance was set at 0.05. The normality of the data was treated with Shapiro Wilk,  $p=0.247$  and it was found no violation,  $p>0.05$ . In conclusion the result shows that there was significance difference observed between the adjusted mean of the experimental group (ANCOVA,  $F=108$ ,  $p<0.001$ ; which is lesser than 0.05) as compared to control group; So Post hoc tukey test was employed for pair wise mean comparison ( $MD=0.68$ ,  $p<0.001$ ); insignificance mean difference was observed between pre and posttest mean of control group ( $t=0.244$ ,  $p=0.809>0.05$ ) but significance difference was established among pretest and posttest mean of experimental group ( $t=9.57^*$ ,  $p\leq 0.001$ , much lesser than 0.05), Thus the researcher suggested to focus on plyometric exercises with skill oriented exercises to improve the agility of badminton players.

**Index Terms:** Plyometric exercises, Skill oriented exercises, Agility, Badminton.

## 1. Introduction

Badminton is one of the fastest growing racket sports at present in the world. The nature of the game demands various motor fitness components along with various other factors. The players need to endure varied fitness throughout the year to be able to attend numerous world level as well as Olympic tournaments. So the player needs high level of scientific training to accumulate maximum benefits from the training program. Thus the researcher undertaken and stated the present as "Effect of Plyometric Exercises With Skill Oriented Exercises on Agility of Regular Practicing Badminton Players".

## 2. Significance of the Study

- 2.1 The present study has highlighted the effect of plyometric exercises with skill oriented exercises among badminton players
- 2.2 The result of the study would be helpful in constructing training program
- 2.3 It would help to motivate the players to improve agility required to extract from various motor fitness component
- 2.4 It would also help physical education teachers as well as coaches to design training plan.

## 3. Purpose of the Study

To determine the effect of plyometric exercises with skill oriented exercises on selected on agility of badminton players

## 4. Hypothesis

It was hypothesized that there might be significant effect of plyometric exercises with skill oriented exercises on agility of badminton players

## 5. Methodology

### 5.1 Sources of Data

The data required to examined was collected from Dibrugarh University along with local academy players

## 5.2 Selections of Subjects

5.2.1 Fifty (50) male regular badminton practicing players were selected as subject

5.2.2 Aged were ranging from 18 to 25 years

5.2.3 Subjects were divided into two equal groups; twenty five (25) experimental groups, twenty five (25) control group for the study.

## 5.3 Sampling Procedure

Simple Random Sampling Method was adopted for selection of subjects

## 5.4 Tools and Criterion Measures

To test the Agility of the subjects, Semo Agility Test was used and the score was recorded in seconds

## 5.5 Collection of Data

The necessary score required to examine for the test were collected before the administration of the training and immediately after completion of the training program, keeping in mind the clear instruction was given before applying any test to the subjects.

## 5.6 Administration of Training Program

The training program was employed only to the experimental group for three (3) days a week (Monday, Wednesday and Friday). There was no training program on Sunday, Intensity and five (5) minutes duration was increased in the training program after each week up to the ends of 12 weeks.

## 6. Analysis of Data

The data pertaining to study was examined statistically through JAMOVI 2.0.0.0 version software and to test the hypothesis dependent t test and ANCOVA were employed in order to resolve the significance difference and effect, if any. The level of significance to test the hypothesis was set at 0.05.

Table no.01

Testing of Normality						
Dependant Variables	Mean	SD	Sk	Ku	Shapiro-Wilk	
					W	p value
Semo Agility test (experimental/control group)	12.03	0.548	-0.45918	-0.272	0.971	0.247

Sk= Skewness, Ku= Kurtosis, W= Shapiro Wilk Coefficient, p value= Shapiro Wilk p

Prior to analysis, the data were examined for normality through JAMOVI software and it was found that the assumption for normality was not violated as the Shapiro Wilk value, W=0.971, p=0.247 (p>0.05).

Table no.02

Description of Mean, Standard Deviation and t ratio for the Pre and Post Test Data Analysis on Semo Agility Test of Experimental Group

Variables	Mean		S.D.		Mean diff. (MD)	S.E. of Mean Diff.	t ratio	p value
	Pre test	Post test	Pre test	Post test				
Semo Agility Test	11.8	10.9	0.607	0.464	0.897	0.0937	9.57*	<.001

Table no.02 shows the obtained 't' value (9.57) and p <0.001 indicates that there was highly significance difference observed (p<.05) between the pretest and posttest mean of the experimental group.

Table no.03

Description of Mean, Standard Deviation and t ratio for the Pre and Post Test Data Analysis on Semo Agility Test of Control Group

Variables	Mean		S.D.		Mean diff. (MD)	S.E. of Mean Diff.	t ratio	p value
	Pre test	Post test	Pre test	Post test				
Semo Agility Test	12.25	12.25	0.382	0.38	0.0016	0.006	0.244 <sup>®</sup>	0.809

Table no.03 shows ( $t=0.244$ ,  $p=0.809$ ) that there was no significance difference observed between the pretest and posttest mean of the control group

### 6.1 Computation of Analysis of Covariance to check the actual effect of training program after adjusted with the pretest and posttest data of experimental and control group

Table no.04

#### 6.1.1 Description of Pretest, Posttest and Adjusted Mean of Semo Agility Test for Analysis of Covariance

Groups	Pretest Mean	Posttest Mean	Adjusted Mean
Experimental	11.8	10.9	11.4
Control	12.25	12.25	12.1

Table no.05

#### 6.1.2 Analysis of Covariance (ANCOVA) for Semo Agility Test

	Sum of Squares	df	Mean Square	F value	P value
Treatment	4.85	1	4.8512	108	< .001*
Errors	2.12	47	0.0451		

Table no.05 Analysis of Covariance (ANCOVA) table above is based on the adjusted mean value which was displayed in table no.04. Based on the table there was significance difference found,  $F=108$ ,  $p<0.001$  after implementing 12 weeks of training program. So the data was subjected to post hoc tukey test for paired wise mean comparison, which is shown below in table no.06

Table no.06

#### Post Hoc Tukey Pair Wise Mean Comparison between Experimental and Control Group of Semo Agility Test

Experimental	Control	Mean Difference	$p_{tukey}$ (Sig.)
11.4	12.1	0.68	< .001*

Table no.6 indicates the pairwise mean difference between experimental and control group of semo agility test ( $M.D=0.68$ ). The P value (<.001) also shows that the experimental group has exhibited better performance in agility among the badminton players significantly as compared to that of control group after implementing 12 weeks of training. The graphical representation of the Pretest Mean, Posttest Mean and Adjusted Mean of the semo agility test has been shown in the figure below.

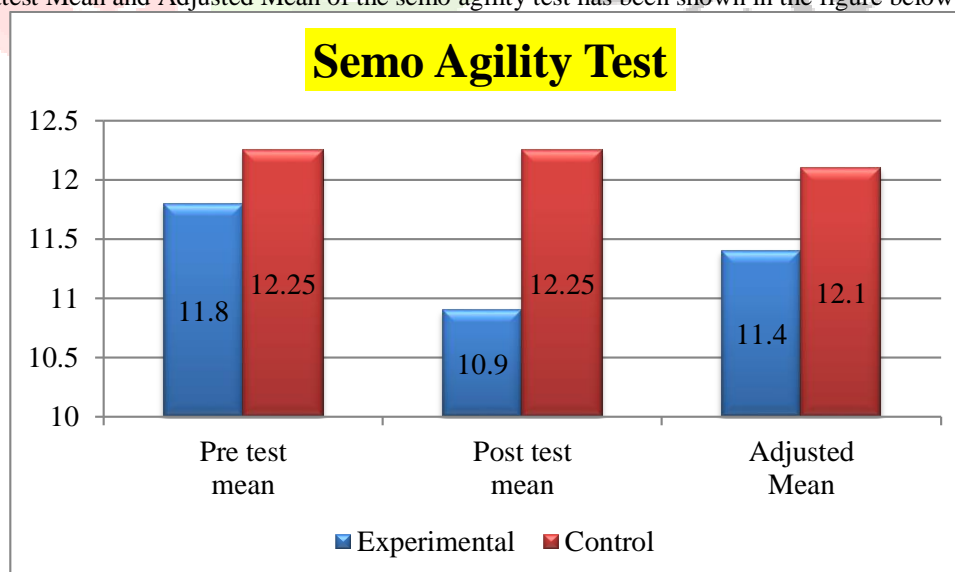


Fig no.01: Diagram Showing Pretest Mean, Posttest Mean and Adjusted Mean Comparison of Semo Agility Test between Experimental and Control Group

## 7. Discussion on Finding

On the basis of finding from table 2, 5 and 6 it is clearly understood that the experimental group has shown significant difference after 12 weeks of training program and insignificance difference was found in control group as per table no.03 of semo agility test.

## 8. Conclusions

- 8.1 Subjects has shown significant improvement in agility after 12 weeks of training program
- 8.2 The subjects of the control displayed no sign of improvement in agility after 12 weeks.
- 8.3 Badminton players' needs plyometric exercises with skill oriented exercises to improve their agility which ultimately help them to enhance game performance.

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