

# Effects of Swiss Ball Training with Plyometric Circuit Training on Serve Ability among Men Badminton Players

B. Varun Naik<sup>1\*</sup> Dr. P. Johnson<sup>2</sup>

<sup>1</sup> PhD Research Scholar, University College of Physical Education and Sports Sciences, Acharya Nagarjuna University, AP

<sup>2</sup> Principal, University College of Physical Education and Sports Sciences, Acharya Nagarjuna University, AP

**Abstract –** The present study was undertaken to analyze the effects of Swiss ball training with Plyometric circuit training on serve ability among men badminton players. The investigator has selected N=48 men inter collegiate level/state level participated badminton players at random from various college of the Guntur district of Andhra Pradesh, India and their age range from eighteen to twenty five years as per their college record. The badminton players chosen for the study were divided into four equal groups n=12 and designated as experimental group 'A' experimental group 'B' experimental group 'C' and control group 'D'. Swiss ball exercises training were given to group 'A' plyometric circuit training were given to group 'B', Combined training of Swiss ball exercises and plyometric circuit training were given to group 'C' and the 'CG' control group 'D' were restricted to participate in any activities. The trainings were given for a period of twelve weeks. The data were collected before and after the training by conducting French Stalter badminton serve test. The obtained data's were analyzed by Analysis of Covariance (ANCOVA). The level of significant was fixed at 0.05 levels. The results of the study showed that Swiss ball exercises, plyometric circuit training and combined training significantly improved serve ability performance of the badminton players when comparative with control group. The Combined training group badminton players shown excellent performance in French Stalter badminton serve test when comparison with Swiss ball exercises group and plyometric circuit training group badminton players.

**Keywords:** – Plyometric Exercises, Swiss Ball Exercises, Circuit, Serve.

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## INTRODUCTION

Badminton is an explosive sports, which required master the technique and physical endurance. Badminton is one of the competitive sports, involving unique movement techniques and relatively small field strength supported by physical condition, mental attitude, intelligence, courage and technical skills of players as well as tactical efficiency (Heang, 2006). Beate, (2005) stated that Swiss ball exercises training is one of rubber resistors trainings mainly used in the session to develop physical fitness of the players, which leads to increase the resistance of whole working muscles during work outs and therefore positively increase and enhance the power of abdominal and back muscles. It also used to evaluate balance and coordination of the players.

Plyometric circuit training describes the way a workout is structured it consists of a series of plyometric exercises or stations completed in succession with minimal rest in between. Through

plyometric circuit training athletes increase their strength, power and endurance, by increasing the repetitions of exercise at each station or by doing the required frequencies of exercise in a shorter length of form (Morgan 1957). Plyometric circuit training is program players moves from one plyometric exercise station to another planned sequence and in the shortest possible time. In planning a circuit training program plyometric exercises are chosen to fit the need of the players each of the plyometric exercise them numbered and assigned to certain area called station (Neal 1969).

## STATEMENT OF THE PROBLEM:

The purpose of the study was to investigate the "effects of Swiss ball training with Plyometric circuit training on serve ability among men badminton players".

## OBJECTIVES OF THIS STUDY

1. To measure the influence of Swiss ball exercise treatment on serves ability of badminton players.
2. To evaluate the impact of plyometric circuit training treatment on serves ability of badminton players.
3. The examined the effects of combined training treatment on serve ability of badminton players.
4. To understand the changes between Swiss ball exercises, plyometric training, and combined training on serve ability of badminton players.

## HYPOTHESES:

- It was hypothesis that there will be a significant improvement on serve ability after the twelve weeks of training in Swiss ball exercises group, plyometric circuit training group badminton players and combined training group [Swiss ball exercises and plyometric circuit training] group badminton players when compared with control group badminton players.
- It was hypothesis that combined training group badminton players will be superior to the Swiss ball exercises and plyometric circuit training group badminton player on serve ability.

## METHODOLOGY:

The purpose of this study was to find out the effects of Swiss ball training with Plyometric circuit training on serves ability among men badminton players. To achieve the purpose of this study investigator has selected N=48 men inter collegiate level and state level participate badminton players at random from various college of guntur district of Andhra Pradesh, India and their age range from eighteen to twenty five years as per their college record.. The subjects chosen for study was divided into four groups each groups consisted of twelve badminton players and designated as experimental group 'A' experimental group 'B' experimental group 'C' and control group 'D'. Swiss ball exercises were given to group 'A' [SBETG] plyometric circuit training were given to group 'B' [PCTG], Combined training of Swiss ball exercises and plyometric circuit training were given to group 'C' [CSBPCTG] and the 'CLG' control group 'D' was restricted to participate in any of the training programme other than their regular activities.

Training was given three days in a week for twelve weeks to SBETG, PCTG and CSBPCTG badminton

players. The subject were tested on serve test at the beginning (Pre-test) and at the end of the experimental period (Post-test). To measure the serve test performance French Stalter badminton serve test were used respectively because of their simplicity and availability of necessary facilities, instrument and equipment's. The analysis of data on French Stalter badminton serve test data have been examine by ANCOVA in order to determine the differences if any among the group at pre and posttest.

Table – I

Analysis of Covariance of SBETG, PCTG, CSBPCTG and CLG badminton players for serve test performance [In number]

TEST	SBET GROUP	PCT GROUP	CSBPCT GROUP	CLG GROUP	SOURCE OF VARIANCE	SUM OF SQUARES	df	MEAN SQUARES	OBTAINED F
Pre Test	71.41	70.00	68.16	70.75	Between	70.83	3	23.61	
Mean	6.61	4.36	5.52	5.94	Within	1414.83	44	32.15	0.73
SD									
Post Test	81.91	80.83	87.00	66.33	Between	2835.72	3	945.24	
Mean	4.48	4.06	3.33	5.15	Within	817.25	44	18.57	50.89*
SD									
Adjusted	81.31	80.87	87.86	66.03	Between	3017.59	3	1005.86	
Post Test					Within	528.27	43	12.28	81.87*
Mean									
Diff	10.5	10.83	18.84	4.42					

\*Significant at 0.05 level of confidence  
Table value F-ratio at 0.05 level of confidence for 3 and 44 (df) =2.82, 3 and 43 (df) =2.82.

The above table-I shows that there is a significant difference on serve test among the four groups such as Swiss ball exercise group [SBEG], plyometric circuit training group (PCTG), combined training of Swiss ball exercises and plyometric circuit training [CSBPCTG] and control group (CLG). Since the calculated 'F' value required being significant at 0.05 level for d/f 3, 44 and 3, 43 are 2.82 and 2.82, but the calculated values of serve test post and adjusted posttest 'F' values are 50.89 and 81.87 respectively. Which are higher than the tabulated value. Since the obtained 'F' ratio is found significant.

Table – II

Scheffes Post hoc test for mean difference between SBETG, PCTG, CSBPCTG and CLG badminton players for serve test performance [In number]

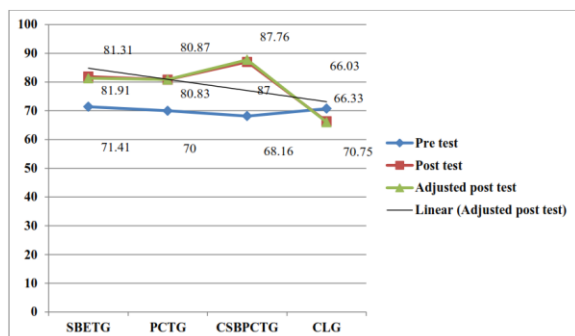
ADJUSTED POSTTEST MEANS VALUES					Required . C I
SBET GROUP	PCT GROUP	CSBPCT GROUP	CLG GROUP	Mean Difference	
81.31	80.87	-	-	0.44	4.14
81.31	-	87.86	-	6.55*	4.14
81.31	-	-	66.03	15.28*	4.14
-	80.87	87.86	-	6.99*	4.14
-	80.87	-	66.03	14.84*	4.14
-	-	87.86	66.03	21.83*	4.14

\*Significant at 0.05 level of confidence

The mean difference SBETG badminton players and CSBPCTG badminton players, SBETG badminton players and CLG badminton players, PCTG badminton players and CSBPCTG

badminton players, PCTG badminton players and CLG badminton players, CSBPCTG and CLG badminton players were 6.55, 15.28, 6.99, 14.84 and 21.83 which are higher than the CI value 4.14. Therefore study approved that there is significant differences exist between above groups on badminton players. Further the study proved that there is no significant difference between SBETG and PCTG.

The prior test mean value, post test mean values and adjusted post test mean values of SBETG, PCTG, CSBPCTG and CLG badminton players for serve test performance displayed in line graph



**Figure –I display the line graph of pre test, post test and adjusted post test mean values for serve test of SBETG, PCTG, CSBPCTG and CLG badminton players badminton players.**

## DISCUSSION ON HYPOTHESIS:

- In the first hypothesis it was stated that there will be a significant improvement in serve ability after the twelve weeks of training in Swiss ball exercises group, plyometric circuit training group badminton player, and combined training group [Swiss ball exercises and plyometric circuit training] group badminton players when compared with control group badminton players. The result of the study found that experimental group's badminton players serve ability performance level improved when compared with control group. Hence the research hypothesis is accepted.
- In second hypothesis mention that combined training group badminton players will be superior to the Swiss ball exercise group and plyometric circuit training group badminton player. The study found that combined training group badminton players given best performance when comparison with SBETG and PCTG training group badminton players. Hence research hypothesis accepted.

## DISCUSSION AND FINDINGS:

The Swiss ball exercises training group badminton payers, plyometric circuit training group badminton

players group and combined Swiss ball exercises and plyometric circuit training group badminton players score more points in serve test of the badminton players skill related performance variables improved significantly with the impact of Swiss ball training with plyometric circuit training. The experimental studies on badminton skill related performance variables were Ramajayam and Vijay (2016) concluded that plyometric exercises with badminton specific drills training groups badminton player shown better improvement in badminton skills short serve and long serve comparative to other two group's badminton players. Ibrahim and Ibrahim (2017) result of the study showed that core stability training is an effective method for developing the dynamic balance and smashing velocity and accuracy performance of badminton players. Michael et al., (2017) study proved that badminton specific exercises had positive impact to develop short serve performance of badminton players. Sarhang (2014) research believes that high intensity interval training lead to greater changes in developing forehand and back hand shot of badminton players. Srinivasan and Saikumar (2012) study derived that Long serve and Forehand Clear of badminton players had significant improvement with the influence of Conventional training and combined with ladder training. Further the study concluded that combined training of conventional and ladder training group badminton players shown better performance than conventional training. Mazin and Sarahang (2014) result of the current study reveal that high serve, low serve, high serve performance, and low serve performance tests recorded improvement with the impact of distributor style training and intensive style training. The intensive style training had more effective to lead worthwhile growths in high and low and serving accuracy test of badminton players. Helal (2015) study found that the experimental group's badminton players had good effect of visual training on improving accuracy of attack shots performance

## CONCLUSIONS:

The three empirical groups Swiss ball exercises group badminton players [SBETG], plyometric circuit training group badminton players [PCTG] and combined Swiss ball exercises and plyometric circuit training group badminton players [CSBPCT] scored more points on serve test comparatively control [CLG] group badminton players. Further the study confirmed that combined Swiss ball exercises and plyometric circuit training group badminton players [CSBPCT] shown excellent performance to score more points on serve test comparative to isolated training groups Swiss ball exercises group badminton players [SBETG] and plyometric circuit training group badminton players [PCTG]. There were no significant changes between two empirical group's namely Swiss ball exercises group badminton players [SBETG] and

plyometric circuit training group badminton players [PCTG] on Serve test.

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## Corresponding Author

**B. Varun Naik\***

PhD Research Scholar, University College of Physical Education and Sports Sciences, Acharya Nagarjuna University, AP