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Effects of Swiss Ball Training with Plyometric Circuit Training on Coordination among Men Badminton Players

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Abstract – The present study was undertaken to analyze the effects of Swiss ball training with Plyometric circuit training on coordination 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 Wall toss 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 coordination performance of the badminton players when comparative with control group. The Combined training group badminton players shown excellent performance in wall toss performance test when comparison with Swiss ball exercises group and plyometric circuit training group badminton players.

Keywords: – Plyometric Exercises, Swiss Ball Exercises, Circuit, Coordination.

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INTRODUCTION

Swiss ball was developed in 1963 by Aquilinocosani, an Italian plastic manufacturer (Kanika et al., 2018). Swiss ball is also known by various different names gym ball, stability ball, fitness ball, air ball, balance ball, physio ball, exercise ball and therapy ball. When exercises were perform on Swiss ball its high unstable and more demand on abdominal and back muscles (Aditya, 2017).

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). Plyometric exercises defined as rapid eccentric movements which are then followed by concentric contractions in the same muscle group, which usually involves repetitive jumping, running, and explosively altering motion (Vaczi, et al, 2011).

STATEMENT OF THE PROBLEM:

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

OBJECTIVES OF THIS STUDY

1. To measure the influence of Swiss ball exercise treatment on coordination of badminton players.
2. To evaluate the impact of plyometric circuit training treatment on coordination of badminton players.
3. The examined the effect of combined training treatment on coordination of badminton players.

4. To understand the changes between Swiss ball exercises, plyometric training, and combined training on coordination of badminton players.

HYPOTHESES:

- It was hypothesis that there will be a significant improvement on coordination 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 coordination.

METHODOLOGY:

The purpose of this study was to find out the effects of Swiss ball training with Plyometric circuit training on coordination 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 coordination at the beginning (Pre-test) and at the end of the experimental period (Post-test). To measure the coordination performance wall toss test were used respectively because of their simplicity and availability of necessary facilities, instrument and equipment's. The analysis of data on wall toss 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 coordination 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 Mean SD	25.58 1.97	25.08 1.88	24.50 1.50	24.66 1.77	Between	8.41	3	2.80	0.87
					Within	141.50	44	3.21	
Post Test Mean SD	29.75 2.34	31.08 1.37	33.75 1.81	22.66 2.01	Between	806.22	3	268.74	72.95*
					Within	162.08	44	3.68	
Adjusted Post Test Mean	29.31	30.99	34.07	22.87	Between	803.63	3	267.87	123.78*
					Within	93.05	43	2.16	
Mean Diff	4.17	6.0	9.25	2.0	-	-	-	-	-

*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.
*Significant

The above table-I shows that there is a significant difference on coordiantion 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 coordination post and adjusted posttest 'F' values are 72.95 and 123.78 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 coordination performance [In number]

ADJUSTED POSTTEST MEANS VALUES					Required C I
SBET GROUP	PCT GROUP	CSBPCT GROUP	CLG GROUP	Mean Difference	
29.31	30.99	-	-	1.68	1.74
29.31	-	34.07	-	4.76*	1.74
29.31	-	-	22.87	6.44*	1.74
-	30.99	34.07	-	3.08*	1.74
-	30.99	-	22.8	8.12*	1.74
-	-	34.07	22.87	11.2*	1.74

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 4.76, 6.44, 3.08, 8.12 and 11.2 which are higher than the CI value 1.74. 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 coordination performance displayed in line graph

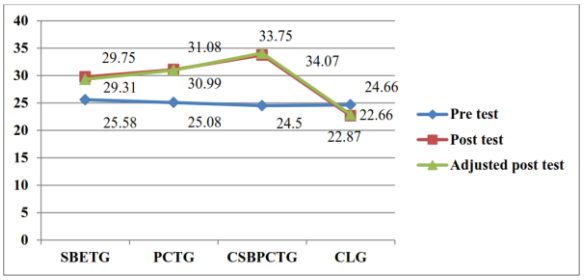

Figure –I display the line graph of pre test, post test and adjusted post test mean values for coordination of SBETG, PCTG, CSBPCTG and CLG badminton players badminton players.

DISCUSSION ON HYPOTHESIS:

- In the first hypothesis it was stated that there will be a significant improvement in coordination 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 coordination 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 coordination performance of Swiss ball exercises training group badminton players [SBETG], plyometric circuit training group badminton players [PCTG] and combined swiss ball exercises and plyometric circuit training group badminton players [CSBEPCTG] were positively gain improvement with their specific training impact. The research articles related to the experimental treatment to the coordination listed in this study were Rajeev (2015) study found 12-weeks of Pilate's exercises, callisthenic exercises and combined exercises significantly produced improvement in coordination performance. Derya et al., (2012) study seems that both the training exercises, calisthenics exercises and Pilate's exercises more likely to improved coordination of women. Sidney (2013) statistically analysis of motor coordination scores indicated that motor coordination of empirical group increased by the progressive resistive exercise program. Dejan et al., (2019) result of this research study showed that 10-weeks of modern and recreational dance exercises positively improved the parameters of coordination of empirical group's female dancers. Sheetal and Pooja (2018) study shown that both training were effective to improve the coordination. Whereas steeping exercises were more effective to improve lower limb coordination than Frenkel's exercises.

CONCLUSIONS:

The study proved that 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] coordination- wall toss test in 30 seconds performance significantly improved comparative with control [CLG] group badminton players. Further the study confirmed that combined Swiss ball exercises and plyometric circuit training group badminton players [CSBPCT] performed excellent on coordination- wall toss test in 30 seconds comparative to isolated training groups Swiss ball exercises group badminton players [SBETG] and plyometric circuit training group badminton players [PCTG]. Whereas there were no significant changes between two empirical groups namely Swiss ball exercises group badminton players [SBETG] and plyometric circuit training group badminton players [PCTG].

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