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Isolated and Combined Effect of Resistance Training and Plyometric Training on Jump Service Ability among Women Volleyball Players

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Abstract – The present study was undertaken to analyze the effect of isolated and combined effect of resistance training and plyometric training on jump service ability among women volleyball players. The investigator has selected N=80 women inter collegiate level/state level participated volleyball players at random from various college of the YSR Kadapa district of Andhra Pradesh, India and their age range from eighteen to twenty five years as per their college record. The volleyball players chosen for the study were divided into four equal groups n=20 and designated as experimental group 'A' experimental group 'B' experimental group 'C' and control group 'D'. polyometric exercises training were given to group 'A' resistance exercises training were given to group 'B', Combined training of plyometric exercises and resistance exercises 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 Russell- Lange. 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 plyometric exercises, resistance exercises and combined training significantly improved jump service ability performance of the volleyball players when comparative with control group. The Combined training group volleyball players shown better performance in jump service ability performance test when comparison with plyometric exercise training group and resistance exercises training group volleyball players.

Keywords: – Plyometric Exercises, Resistance Exercises, Service.

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INTRODUCTION

The best results in a weight training program can only be realized when the program is fitted to the individuals need and he is conscientiously involved in it. If an athlete is presently working on a weight training program and getting good results, there is no need to experiment with a new method until its advantages and disadvantages have been evaluated. Weight training exercises are also useful as therapy following injuries to athletes. This completely differs from conditioning routines and is prescribed by the team physician as rehabilitative therapy (Reddy 2009).

The rapid eccentric (lengthening) action immediately followed by a rapid concentric (shortening) action of muscles to produce maximum force in shortest possible time. Plyometric exercises involve three phases namely first phase eccentric muscle action generating elastic energy, second phase time between the pre stretch and start of concentric muscle movement known as amortization phase, shorter the phase more powerful the muscle contraction.

STATEMENT OF THE PROBLEM:

The purpose of the study was to investigate the "effect of isolated and combined effect of resistance training and plyometric training on jump service ability performance among women volleyball players.

OBJECTIVES OF THIS STUDY

1. To measure the influence of plyometric exercise training treatment on jump service performance ability of volleyball players.

2. To evaluate the impact of resistance exercise training treatment on jump service performance ability of volleyball players.

3. The examined the effect of combined training treatment on jump service performance ability of volleyball players.

4. To understand the changes between plyometric exercises training, resistance exercises training and combined training on jump service performance ability of volleyball players.

HYPOTHESIS:

- It was hypothesis that there will be a significant improvement in jump service performance ability after the twelve weeks of training in plyometric exercises training group volleyball player, resistance exercises training group volleyball players and combined training group [plyometric training and resistance exercises] group volleyball players when compared with control group volley ball players.

- It was hypothesis that combined training group volleyball players will be superior to the plyometric training group and resistance exercises training program group volleyball player on jump service performance ability.

METHODOLOGY:

The purpose of this study was to find out the effect of isolated and combined effect of resistance training and plyometric training on explosive performance among women volleyball players. To achieve the purpose of this study investigator has selected N=80 women inter collegiate level and state level participate volleyball players at random from various college of YSR Kadapa 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 volleyball players and designated as experimental group 'A' experimental group 'B' experimental group 'C' and control group 'D'. Plyometric training were given to group 'A' [PETG] resistance exercises training were given to group 'B' [RETG], Combined training of plyometric training and resistance exercises training were given to group 'C' [CPERETG] 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 PETG, RETG and CPERETG volleyball players. The subject were tested on jump service performance ability at the beginning (Pre-test) and at the end of the experimental period (Post-test). To measure the jump service performance ability performance Russell- Lange test were used respectively because of their simplicity and availability of necessary facilities, instrument and equipment's. The analysis of data on jump service performance ability 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 PETG, RETG, CPERETG and CLG volleyball players jump service performance ability [In number]

TEST	PETG	RETG	CPERETG	CLG	SOURCE OF VARIANCE	SUM OF SQUARES	df	MEAN SQUARES	OBTAINED F
Pre Test Mean	19.20	19.40	19.65	19.15	Between	3.10	3	1.03	0.21
SD	2.35	2.34	2.00	1.98	Within	361.10	76	4.75	
Post Test Mean	22.90	21.65	24.30	18.05	Between	430.45	3	143.48	57.54*
SD	1.61	1.87	1.12	1.60	Within	189.50	76	2.49	
Adjusted Post Test Mean	22.90	21.61	24.11	18.17	Between	396.34	3	132.11	224.76*
					Within	44.08	75	0.58	
Mean Diff	3.70	2.25	4.65	1.10	-	-	-	-	-

*Significant at 0.05 level of confidence

Table value F-ratio at 0.05 level of confidence for 3 and 76 (df) =2.73, 3 and 75 (df) =2.73. *Significant

The above table-I shows that there is a significant difference on jump service performance ability among the four groups such as plyometric training group (PETG), resistance exercises training group (RETG), combined training of plyometric training and resistance exercises training [CPERETG] and control group (CLG). Since the calculated 'F' value required being significant at 0.05 level for d/f 3, 76 and 3, 75 are 2.73 and 2.73, but the calculated values of explosive power post and adjusted posttest 'F' values are 57.54 and 224.76 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 PETG, RETG, CPERETG and CLG volleyball players on jump service performance ability [In numbers]

ADJUSTED POSTTEST MEANS VALUES					
PETG	RETG	CPERETG	CLG	Mean Difference	Required . C I
22.90	21.61	-	-	1.25*	0.68
22.90	-	24.11	-	1.40*	0.68
22.90	-	-	18.17	4.85*	0.68
-	21.61	24.11	-	2.65*	0.68
-	21.61	-	18.17	3.60*	0.68
-	-	24.11	18.17	6.25*	0.68

**Significant at 0.05 level of confidence*

The mean difference PETG volleyball players and RETG volleyball players, PETG volleyball players and CPERETG volleyball players, PETG volleyball players and CLG volleyball players, RETG volleyball players and CPERETG volleyball players, RETG and CLG volleyball players and CPERETG and CLG were 1.25, 1.40, 4.85, 2.65, 3.60 and 6.25 which are higher than the CI value 0.01. Therefore study approved that there is significant differences exist between above groups on volleyball players.

The prior test mean value, post test mean values and adjusted post test mean values of PETG, RETG, CPERETG and CONG volleyball players of jump service performance ability displayed in line graph

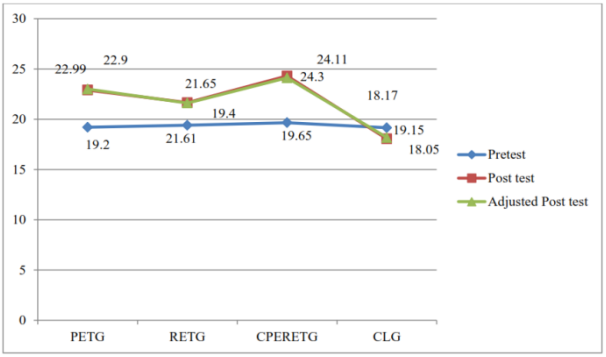

Figure –I display the line graph of pre test, post test and adjusted post test mean values for jump service performance ability of PETG, RETG, CPERETG and CLG volleyball players.

DISCUSSION ON HYPOTHESIS:

- In the first hypothesis it was stated that there will be a significant improvement in jump service performance ability after the twelve weeks of training in plyometric exercises group volleyball player, resistance exercise training group volleyball players and combined training group [plyometric training and resistance exercises] group volleyball players when compared with control group volleyball players. The result of the study found that experimental group's volleyball players jump service performance ability level improved when compared with control group. Hence the research hypothesis is accepted.

- In second hypothesis mention that combined training group volleyball players will be superior to the plyometric exercises training group and resistance exercises training group volleyball player. The study found that combined training group volleyball players given best performance when comparison with PETG and RETG training group volleyball players. Hence research hypothesis accepted.

DISCUSSION AND FINDINGS:

The isolated and combined exercises of resistance and plyometric training has beneficial positive impact to increase the performance of jump serving ability and volley ability of the female volleyball players Zabchi Noreddine A et. al. (2016) suggested that contrastive training programme of weight and plyometric has significant positive impact to develop vertical jumping ability of volleyball players which contribute to develop smash skill of volleyball.Sudhir et al., (2013) clearly indicated that volleyball ball training program is positively effective for improvement of spiking, blocking, digging and first pass and serving ability of volleyball players. Muniraju et. al., (2017) conclusion were drawn based on the result plyometric exercises and specific training with skill training [PESTSTG] and plyometric training with skill training and skill training [PTST] positively gain improvement on Volley ability of volleyball players.Tomislav et. al., (2016) concluded that 8-weeks of game based training to involve in training to improve skill accuracy of volleyball players.

CONCLUSIONS:

The scoring number of three empirical groups increased with the isolated and combined resistance exercises and plyometric exercises. The combined plyometric and resistance exercises training were more effective to score more number of points in service test than two selected isolated training. The pyometric exercises were more effective than resistance exercises to score more number of points in service test.

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