



Effect of Weight Training Programmes on Explosive Power of College Volleyball Players

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Abstract: The aim of research is to determine the effect of weight training on explosive power of College Volleyball Players. Thirty six subjects were randomly assigned to three equal groups of 12 subjects and they were Degree College Volleyball Players who were studying in Degree Colleges affiliated to Karnatak University, Dharwad of Karnataka, India. Three groups were assigned into Experimental Group-I (WRE) acted as Weight Training group practicing resistance exercises with own body weight; Experimental Group-II (WRES) acted as Weight Training Group practicing resistance exercises with weights along with specific skills and Group-III (CG) acted as control group. The Pre test scores on explosive power were conducted for all the subjects by administering medicine ball throw in meters. Experimental groups practiced weight training for the period of 12 weeks. The post test mean scores of explosive power were collected after the treatments. ANOVA and ANCOVA were used to determine the significant mean scores for Explosive Power of Arms. By using LSD post hoc test where the obtained F value was found significant. The level of significance was fixed at 0.05 level. It was concluded that both weight training groups developed explosive power of College Volleyball Players. It was concluded that both weight training groups developed explosive power of arms of College Volleyball Players. The weight training practicing resistance exercises with weights and practicing volleyball skills practice was most appropriate for developing explosive power of arms when compared with weight training practicing resistance exercises with own body weight.

Index Terms - Weight Training, Resistance Exercises, Own Body, Weight, College Volleyball Players

I. INTRODUCTION

Volleyball is a very famous game played by enthusiasts and professionals all over the world. Performance can be increased or improved to a great extent only by causing biological adaptation and this is possible only through systematic and scientific training. Specificity of exercises and overload principle should be followed in order to enhance the functioning efficiency of the various systems of the body. Numerous training procedures are in practice to improve each and every motor fitness components on various levels.

The importance of resistance training to sports performance has been supported by studies which have demonstrated that resistance training in the form of weight training and more recently, plyometric training have enhanced some competitive performances. Many studies have reported that resistance training has enhanced muscular strength, but failed to induce changes in dynamic sporting performance (J Bloomfield, 1994). The benefits of weight training include greater muscular strength, improved muscle tone and appearance, increased endurance, enhanced bone density, and improved cardiovascular fitness (Ada, 2006).

Weight training is doing exercise, using resistance (normally weights) to build muscle strength and endurance. It is the use of resistance other than weight of the body to develop specific areas of the body. Starting a weight strength training program means one has started a new lifestyle because strength is reversible. It will decline if one does not continue to obtain a strength stimulus throughout one's life. Volleyball is a dynamic, fast-paced game. The purpose of strength training for volleyball is not to build big muscles, but to develop the physical attributes necessary to improve a player's performance (Aagaard et al., 1997; Briner and Kacmar, 1997). Power is another variable involved in volleyball performance. Need of power in volleyball is highly essential in relation to the energy used in volleyball. The attacker attacks the ball only when he has power in arm muscles. The stronger arm muscles reveals the power of the arms. The power and speed of the arms are interlinked for a volleyball player need of power in volleyball is highly essential in relation to the energy used in jumping, smashing, blocking, turning etcetera.

Praveenakumar; Gnanaraj & Muthuraj (2020) concluded that twelve weeks of strength training had an impact to increase explosive power. Alwan & Obaid (2020) The 12 Weeks of training period showed positive impact on the development of explosive power of the legs for young players. Sakthivel & Ramesh (2019) concluded that six weeks exercise period of both Plyometric Training Group and Weight Training Group improve the leg explosive power compared than other counterpart i.e., control group. Ramya & Rajalakshmi (2019) confirmed that six weeks training on Explosive Power was considerably altered due to effect of Resistance Training (RT) group among secondary school players. Rajendran (2015) revealed that due to the effect of six weeks of resistance training the chosen explosive power had significantly better. Kala and Gokulakrishnan (2015) confirms that concurrent resistance and plyometric training programme produced a significant development on the explosive power. From the studies it was observed that weight training is more useful to develop explosive power of volleyball players. Hence, in the present study is to identify the effect of weight training programmes on Explosive Power of Arms of College Volleyball Players.

II. PURPOSE OF THE STUDY

The purpose of the study is to determine the effect of weight training programmes on Explosive Power of Arms of College Volleyball Players.

III. STATEMENT OF HYPOTHESIS

It was hypothesized that there would be a significant difference in the Explosive Power of Arms of Volleyball players due to practice of 12 Weeks of weight training programmes.

IV. METHODOLOGY

The aim of research is to determine the effect of weight training on explosive power of College Volleyball Players. Thirty six subjects were randomly assigned to three equal groups of 12 subjects and they were Degree College Volleyball Players who were studying in Degree Colleges affiliated to Karnatak University of Dharwad Karnataka, India. Three groups were assigned into Experimental Group-I (WRE) acted as Weight Training group practicing resistance exercises with own body weight; Experimental Group-II (WRES) acted as Weight Training Group practicing resistance exercises with weights along with specific skills and Group-III (CG) acted as control group. The Pre test scores on explosive power were conducted for all the subjects by administering medicine ball throw in meters. Experimental groups practiced weight training for the period of 12 weeks. The post test mean scores of explosive power were collected after the treatments. ANOVA and ANCOVA were used to determine the significant mean scores for Explosive Power of Arms. By using LSD post hoc test where the obtained F value was found significant. The level of significance was fixed at 0.05 level.

V. ANALYSIS OF THE DATA

The findings pertaining to analysis of covariance between experimental groups and control group on Explosive Power of Arms of college Volleyball Players for pre, post adjusted post tests scores separately.

Table-1. ANCOVA Results for the pre-test and post-test data on Explosive Power of Arms (In Meters) of Weight Training Group-I (WRE), Weight Training Group-II (WRES) and Group-III Control Group (CG).

Test scores		CG	WTR	WTRS	SV	df	Sum of square	Means square	'F' ratio
Pre-test	Mean	4.557	4.424	4.724	B	2	0.542	0.271	0.60 ^{NS}
	S.D.	0.671	0.804	0.493	W	33	14.744	0.447	
Post-test	Mean	4.667	5.530	5.433	B	2	5.359	2.680	8.24*
	S.D.	0.576	0.581	0.552	W	33	10.722	0.325	
Adjusted Post-test	Mean	4.672	5.594	5.365	B	2	5.516	2.758	11.24*
					W	32	7.850	0.245	

Note: SV: Source of Variance; B-Between Groups; W- Within Groups; S.D.: Standard Deviation
Table value at 0.05(df-2, 32/33)=3.32; *Significant at 0.05 level; ^{NS}Not Significant

The table shows the pre test mean scores of explosive power of arms of CG, WRE and WRES are 4.557, 4.424 and 4.724 and standard deviations are 0.671, 0.804 and 0.493 respectively. The obtained 'F' ratio of 0.60 for pre-test mean of explosive power (arms) is less than the table value 3.32 for df 2 and 33 required for significance at 0.05 level. This indicates insignificant difference in the pre test scores of explosive power among the groups.

The above table also shows post-test mean values of explosive power (arms) of CG, WRE and WRES are 4.667, 5.530 and 5.433 and standard deviation are 0.576, 0.581 and 0.552 respectively. The obtained 'F' ratio of 8.24 on post-test mean of explosive power (arms) is greater than the table value 3.32 for df 2 and 33 required for significance at 0.05 level.

Further, the above table shows the mean scores of adjusted mean scores of explosive power (arms) of CG, WRE and WRES are 4.672, 5.594 and 5.365 respectively. The obtained 'F' ratio of 11.24 on adjusted post-test mean scores of explosive power is greater than the table value 3.32 for df 2 and 32 required for significance at 0.05 level. This indicated that there was a significant difference in adjusted mean scores of explosive power (arms) of College Volleyball Players. Since, significant F ratio was obtained, the result related to Explosive Power of Arms is further subjected to post hoc analysis by using LSD test and results presented in Table-2.

Table-2. LSD Post Hoc Analysis Results on Explosive Power of Arms (In Meters) of College Volleyball Players among control and experimental groups (CG, WRE and WRES).

Adjusted post-test mean scores of Explosive Power (Arms)			Mean Difference	Critical Difference
CG	WRE	WRES		
4.672	5.594	×	0.922*	0.410
×	5.594	5.365	0.229	
4.672	×	5.365	0.690*	

*Significant at 0.05 of confidence.

The table-2 shows that the adjusted post-test mean difference on Explosive Power of Arms between CG & WRE and CG & WRES groups are 0.922 and 0.690 respectively which are higher than the critical difference of 0.410 at 0.05 level of confidence, but between WRE & WRES are 0.229 is less than the critical difference of 0.410 at 0.05 level of confidence. The finding concludes that there was a significant difference on Explosive Power of Arms of College Volleyball Players between CG and WRE; and CG and WRES and no significant difference exists between WRE and WRES groups. WRE group had developed more explosive power when compared with WRES group. The comparison of pre, post and adjusted post-test mean scores of Explosive Power of arms of College Volleyball Players among control and experimental groups are graphically depicted in Fig.1.

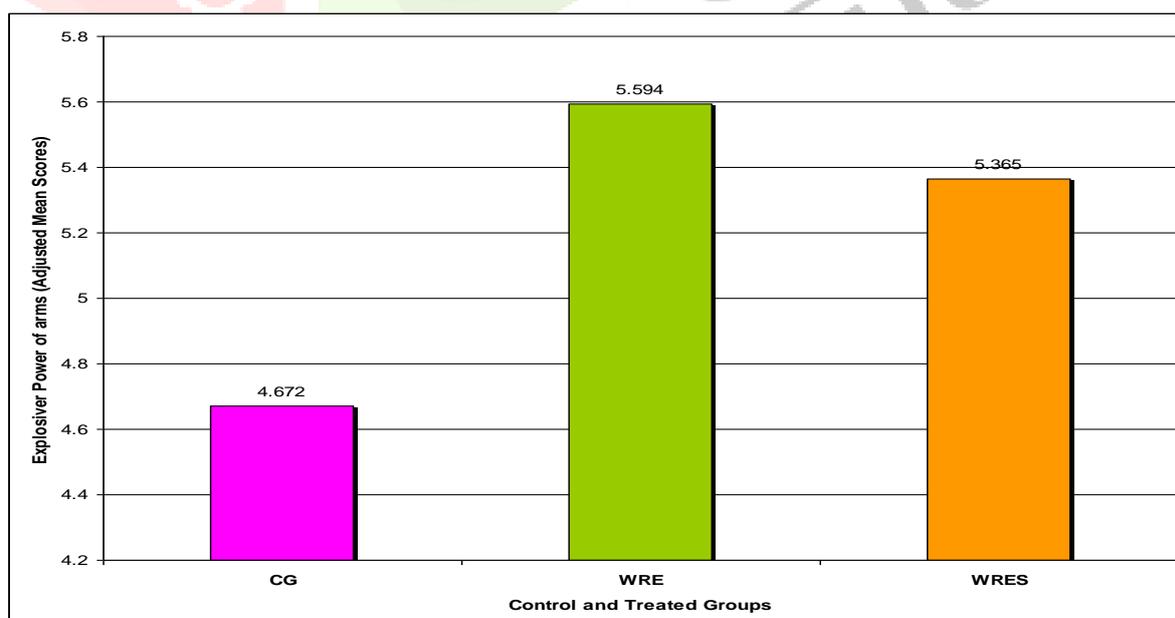


Fig.1: Bar diagram of Pre, Post and Adjusted Post-test Mean scores on Explosive Power of Arms of College Volleyball Players among control and experimental groups.

VI. DISCUSSIONS ON FINDINGS

The finding of the study shows that there exists significant difference in the explosive power of arms of experimental groups by practicing resistance exercises with own body weights and another group practicing resistance exercises with weights and skills practice. The results pertaining to explosive power of arms between pre and post (12 weeks duration) tests mean scores have been found significantly higher in experimental groups when compared to control group. The weight training practicing resistance exercises with weights and practicing volleyball skills practice was most appropriate for developing explosive power of arms when compared with weight training practicing resistance exercises with own body weight. The supportive results found by studies by Praveenakumar; Gnanaraj & Muthuraj (2020) and another by Alwan & Obaid (2020) concluded that twelve weeks of strength training had an impact to increase explosive power. Ramya & Rajalakshmi (2019); Sakthivel & Ramesh (2019) and Rajendran (2015) revealed that due to the effect of six weeks of resistance training, explosive power had significantly better. Kala and Gokulakrishnan (2015) confirmed that concurrent resistance and plyometric training programme produced a significant development on the explosive power. The present result also found significant improvement in explosive power after the weight training programme.

VII. CONCLUSION

It was concluded that both weight training groups developed explosive power of arms of College Volleyball Players. The weight training practicing resistance exercises with weights and practicing volleyball skills practice was most appropriate for developing explosive power of arms when compared with weight training practicing resistance exercises with own body weight.

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