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Effects of Volleyball Specific Resistance Training and Skill Training Packages on the Development of Leg Explosive Power and Speed on the Higher Secondary Level School Boys

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Abstract:
The present study was to find out the effects of Volleyball Specific Resistance Training and Skill Training Packages on the Development of leg explosive power and speed on the Higher Secondary level School boys of Kolar District, Karnataka. To examine the study, 80 higher secondary school boys were selected from Kolar district, Karnataka. The age group ranges from 15 to 17years. Subjects were equally divided into four equal groups namely three experimental groups and one control group. Experimental Group-I underwent Volleyball Specific Resistance Training with Skill Training, Experimental Group-II underwent Volleyball Specific Resistance Training without Skill Training, Experimental Group-III underwent General Resistance Training without Skill Training and group IV Control group did not participate in any special training programme. The training programme was scheduled for all the experimental and control group for twelve weeks, prior and after the training for the subjects, pre - test and post - test were conducted on speed (50 yards dash) and leg explosive power(vertical jump)were tested. The data collected from the subjects were statistically analyzed with 't' ratio to find out significant difference among pre test to post test for experimental groups and control group. The analysis of variance and covariance was used to find out the mean difference among the groups. The result indicates that the Volleyball Specific Resistance Training with Skill Training had better improvement on speed and leg explosive power.

Keywords: *VSRWST-Volleyball Specific Resistance Training With Skill Training group, VSRWOST- Volleyball Specific Resistance Training Without Skill Training group, GRTWOST- General Resistance Training Without Skill Training, CG-Control Group, flexibility, muscular strength and endurance.*

1. Introduction

Volleyball specific resistance training has proven to be a safe and effective method of conditioning for school boys, and it now appears that a growing number of children and adolescents also are training to improve their health, fitness, and sports performance. Although much of what we understand about the stimulus of strength exercise has been gained by exploring the responses of adults to various training protocols, research into the effects of specific resistance training exercise on children and adolescents has increased in recent years. Despite the contention that strength training was inappropriate or dangerous for young weight trainers, the safety and effectiveness of youth strength training are now well documented, and the qualified acceptance of youth specific resistance training by medical and fitness organizations is becoming universal.

It is important to encourage young people to be physically active. Not only does a sedentary lifestyle early in life appear to track into adulthood, a physically active lifestyle during childhood and adolescence may help to prevent some chronic diseases later in life. It has been recommended that children and adolescents be physically active on all, or most, days of the week, as part of play, games, sports, work, transportation, recreation, physical education or planned exercise. Although a variety of physical activities should be recommended, the purpose of this article is to discuss the trainability of leg explosive power, speed in children and adolescents, to

highlight the potential benefits and concerns associated with youth strength training, and to outline strength training guidelines for young weight trainers. Reviews by Blimkie, Sale, and Kraemer et alhave reviewed selected issues related to youth specific training.
Resistance training, also known as strength or weight training, has become one of the most popular forms of exercise for enhancing an individual's physical fitness as well as for conditioning athletes. Resistance training has been used extensively to increase fitness and sports performance. It has been demonstrated to augment maximum strength, power, and jumping ability. It is well known that a variety of resistance training programs can stimulate an increase in one repetition maximum (1RM) strength. However, only a few studies have been attempted to make direct comparisons of different styles of resistance training programs to determine adaptation differences. With short-term training, Marcinik et al. compared high intensity (i.e., 70% of 1-RM) versus low intensity (i.e., 40% of 1-RM) aerobic/circuit resistance training in women who were U.S. Naval recruits. After 8 weeks, 1-RM bench press performance was significantly greater in the high-intensity group, whereas no difference was observed between groups in 1- RM leg press performances. American College of Sports Medicine (ACSM) recommends split routines to maximize strength gains among intermediate-advanced resistance-trained individuals and athletes. With split routine training paradigm, individuals train different body parts on each training session within a week to allow proper muscle recovery and to maximize training loads. The ACSM expands this recommendation suggesting that split training routines should also require the training load.

2. Methodology

The purpose of the study was to find out the effects of Volleyball Specific Resistance Training and Skill Training Packages on the Development of speed and Leg Explosive power on the Higher Secondary Level School boys of Kolar District, Karnataka. To examine the study 80 higher secondary school boys were selected from Kolar district, Karnataka. The age group ranges from 14to 16 years. Subjects were equally divided into four equal groups namely three experimental groups and one control group. Experimental Group-I underwent Volleyball Specific Resistance Training with Skill Training, Experimental Group-II underwent Volleyball Specific Resistance Training without Skill Training, Experimental Group-III underwent General Resistance Training without Skill Training and group IV Control group did not participate in any special training programme. The training programme scheduled for all the experimental and control group for twelve weeks, prior and after the training for the subjects, pre - test and post - test were also conducted on speed (50 yards dash) and leg explosive power(vertical jump)was tested. The data collected from the subjects were statistically analyzed with 't' ratio to find out significant difference among pre test to post test for experimental groups and control group. The analysis of variance and covariance was used to find out the mean difference among the groups.

3. Result of the Study

Variables	Test	Mean	M.D	S.D	S. E.M.	S.E.M.D	't' Ratio
Leg Explosive Power	Pre-Test	43.4000	3.40	2.37088	.53014	.15218	22.34*
	Pos-Test	46.8000		2.01573	.45073		
Speed	Pre-Test	8.3360	.50	.43812	.09797	.08980	5.60*
	Post-Test	7.8325		.46167	.10323		

Table 1: Significance of mean gains / losses between pre and post test of volleyball specific training with skill trainingon leg explosive power and speedof higher secondary level school boys of Kolar district, Karnataka
** Significance at 0.05 level (2.09)*

Table -1 shows the VSRTWST group Leg Explosive power pre test mean (43.40 ± S.D 2.37) and post test mean was (46.80 ± S.D 2.01). Speed pre test mean (8.33 ± S.D 0.43) and post test mean was (7.83± S.D 0.46).The obtained 't' ratio leg explosive power (22.34), speed (5.60) was higher than the table value 2.09 for the degrees of freedom (1, 19). It was found to be statistically significant at 0.05 level of confidence for the VSRTWST group.

Variables	Test	Mean	M.D	S.D	S. E.M.	S.E.M.D	't' Ratio
Leg Explosive Power	Pre-Test	43.5000	2.15	2.41704	.54047	0.11	19.64*
	Pos-Test	45.6500		2.49789	.55855		
Speed	Pre-Test	8.3305	0.38	.51457	.11506	0.107	3.55*
	Post-Test	7.9490		.57682	.12898		

Table 2: Significance of mean gains / losses between pre and post test of volleyball specific training without skill trainingon leg explosive power and speed of higher secondary level school boys of Kolar district, Karnataka
** Significance at 0.05 level (2.09)*

Table -2 shows the VSRTWOST group Leg Explosive power pre test mean (43.50 ± S.D 2.41) and post test mean was (45.65 ± S.D 2.49). Speed pre test mean (8.33 ± S.D 0.51) and post test mean was (7.94± S.D 0.57). The obtained 't' ratio leg explosive power (19.64), speed (3.55) was higher than the table value of 2.09 for the degrees of freedom (1, 19). It was found to be statistically significant at 0.05 level of confidence for the VSRTWOST group.

Variables	Test	Mean	M.D	S.D	S. E.M.	S.E.M.D	't' Ratio
Leg Explosive Power	Pre-Test	43.6000	1.15	2.66	0.51	0.0819	14.38*
	Pos-Test	44.7500		2.63	0.58		
Speed	Pre-Test	8.3310	0.22	0.54	0.14	0.068	3.23*
	Post-Test	8.1089		0.59	0.16		

Table 3: Significance of mean gains / losses between pre and post test of general resistance training without skill trainingon leg explosive power and speed of higher secondary level school boys of Kolar district, Karnataka
** Significance at 0.05 level (2.09)*

Table -3 shows the GRTWOST group Leg Explosive power pre test mean (43.60 ± S.D 2.66) and post test mean was (44.75 ± S.D 2.463). Speed pre test mean (8.33 ± S.D 0.52) and post test mean was (8.10 ± S.D 0.57). The obtained 't' ratio leg explosive power (14.38), speed (3.23) was higher than the table value of 2.09 for the degrees of freedom (1, 19). It was found to be statistically significant at 0.05 level of confidence for the GRTWOST group.

Variables	Test	Mean	M.D	S.D	S. E.M.	S.E.M.D	't' Ratio
Leg Explosive Power	Pre-Test	43.6000	0.15	2.13739	.47793	0.0819	1.83
	Pos-Test	43.7500		2.02290	.45233		
Speed	Pre-Test	8.3265	0.006	.50464	.11284	0.0032	1.83
	Post-Test	8.3205		.50615	.11318		

Table 4: Significance of mean gains / losses between pre and post test of control group on leg explosive power and speed of higher secondary level school boys of Kolar district, Karnataka
** Significance at 0.05 level (2.09)*

Table -4 shows the control group Leg Explosive power pre test mean (43.60 ± S.D 2.13) and post test mean was (43.75 ± S.D 2.02). Speed pre test mean (8.32 ± S.D 0.50) and post test mean was (8.32 ± S.D 0.51). The obtained 't' ratio leg explosive power (1.83), speed (1.83) was lower than the table value of 2.09 for the degrees of freedom (1, 19). It was found to be statistically not significant at 0.05 level of confidence and there were no changes in control group.

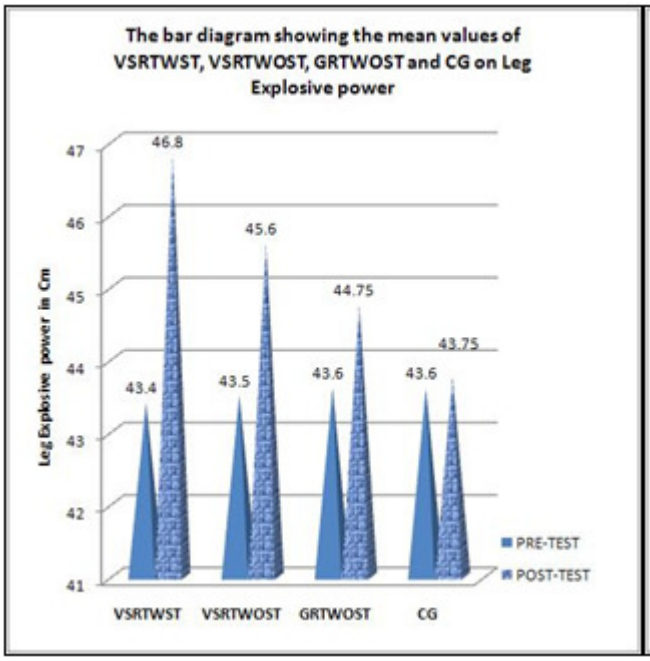

Figure 1

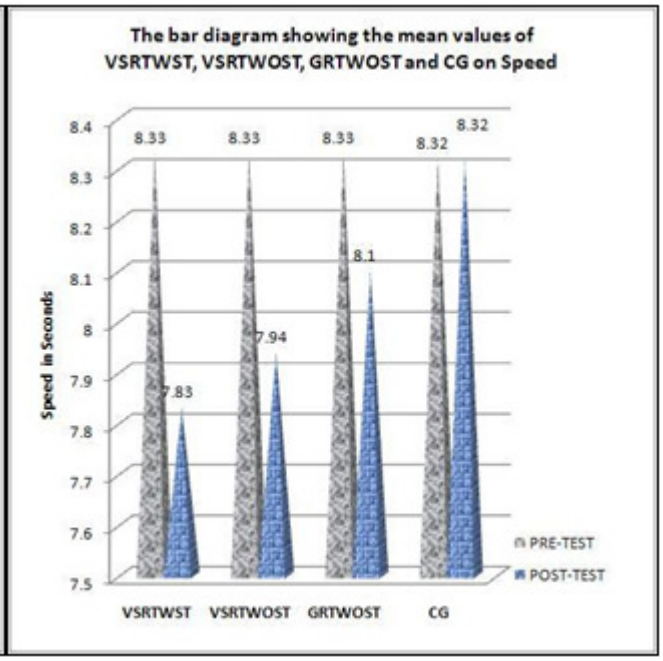

Figure 2

Variables	Sum of variance	Sum of Squares	df	Mean Square	F
Leg Explosive Power	Between Groups	.550	3	.183	.032
	Within Groups	439.400	76	5.782	
Speed	Between Groups	.001	3	.000	.001
	Within Groups	19.032	76	.250	

Table 5: Analysis of variance on pre test means among VSRTWST, VSRTWOST, GRTWOST and CG on leg explosive power and speed of higher secondary level school boys of Kolar district, Karnataka

Variables	Sum of variance	Sum of Squares	df	Mean Square	F
Leg Explosive Power	Between Groups	101.237	3	33.746	6.33*
	Within Groups	405.250	76	5.332	
Speed	Between Groups	2.682	3	.894	3.14*
	Within Groups	21.612	76	.284	

Table 6: Analysis of variance on post test means among VSRTWST, VSRTWOST, GRTWOST and CG on leg explosive power and speed of higher secondary level school boys of Kolar district, Karnataka

Variables		Sum of Squares	df	Mean Square	F
Leg Explosive Power	Between Groups	2.757	3	.919	7.96*
	Within Groups	8.656	75	.115	
Speed	Between Groups	14.896	3	4.67	20.75*
	Within Groups	16.876	75	.225	

Table 7: Analysis of co-variance on adjusted post test mean among VSRTWST, VSRTWOST, GRTWOST and CG on leg explosive power and speed of higher secondary level school boys of Kolar district, Karnataka

4. Result and Discussion

The result of the study was analyzed leg explosive power and speed for three different training group of VSRTWST, VSRTWOST and GRTWOST, over a period of twelve weeks of training, the obtained results favour the players who practised with volleyball specific training with skill training on leg explosive power and speed. The obtained result displayed similar effect among the other two training modules. After the completion of 12 weeks of training period the results on physical fitness parameter are discussed below

4.1. Leg Explosive Power

The volleyball specific resistance training with skill training, the volleyball specific resistance training without skill training and the general resistance training without skill training significantly improved the leg explosive power from pre test to post test. The explosive power increased in the volleyball specific resistance training with skill training (VSRTWST) group pre test mean (43.40± S.D 2.37) and post test mean was (46.80± S.D 2.01). Volleyball specific resistance training without skill training (VSRTWOST) group pre test mean (43.50 ± S.D 2.41) and post test mean was (45.65± S.D 2.49). General resistance training without skill training (GRTWOST) group pre test mean (43.60± S.D 2.66) and post test mean was (44.75 ± S.D 2.63). Leg explosive power significantly improved from pre-test to post-test in all the three experimental groups with no changes in the control group.

The present study demonstrated that increased in Leg explosive power of7.83%,4.94 % and 2.64 % were estimated with vertical jump for the volleyball specific resistance training without skill training, the volleyball specific resistance training without skill training, the general resistance training without skill training respectively. The volleyball specific resistance training without skill training improved Leg explosive power by(7.83 %) better than the volleyball specific resistance training without skill training (4.94 %) and the general resistance training without skill training (2.64 %). Volleyball specific resistance training without skill training improved Leg explosive power (4.49 %) better than the general resistance training without skill training (2.64) and control group. General resistance training without skill training (2.64%) improved leg explosive power better than the control group. The result of the present study is in line with the previous study by Hamid Arazi, Abbas Asadi (2011) Effects of 8 Weeks Equal-Volume Resistance Training with Different Workout Frequency on explosive power improved.

4.2. Speed

The volleyball specific resistance training with skill training, the volleyball specific resistance training without skill training, the general resistance training without skill training significantly improved speed from pre test to post test. The Speed decreased in the volleyball specific resistance training with skill training (VSRTWST) group.

Pre test mean (8.33 ± S.D 0.43) and post test mean was (7.83 ± S.D 0.46). Volleyball specific resistance training without skill training (VSRTWOST) group pre test mean (8.33± S.D 0.51) and post test mean was (7.94± S.D 0.57).General resistance training without skill training (GRTWOST) group pre test mean (8.33± S.D 0.54) and post test mean was (8.10± S.D 0.59). Speed significantly improved from pre test to post test in all three experimental groups with no changes in control group.

The present study demonstrated that decreased in speed of 6.00 %, 4.56 % and 2.64 % were estimated with 50 yards dash test for the volleyball specific resistance training with skill training, the volleyball specific resistance training without skill training and the general resistance training without skill training respectively. The volleyball specific resistance training with skill training decreased speed by 6.00 % better than the volleyball specific resistance training without skill training (4.56 %) and the general resistance training without skill training(2.64 %). Volleyball specific resistance training without skill training decreased speed (4.56 %) better than the general resistance training without skill training (2.64 %) and control group. General resistance training without skill training(2.64 %) decreased speed better than the control group. The results of the present study are in line with previous study byHamid Arazi, Abbas Asadi (2011) Effects of 8 Weeks Equal-Volume Resistance Training with Different Workout Frequency on speed decreased.

5. Conclusions

1. It was concluded that volleyball specific training with skill training improved leg explosive power and speed of higher secondary level school volleyball players.
2. It was concluded that volleyball specific training without skill training improved leg explosive power and speed of higher secondary level school volleyball players.
3. It was concluded that general resistance training without skill training improved leg explosive power and speed of higher secondary level school volleyball players.
4. It was concluded that volleyball specific training with skill training improved leg explosive power and speed better than the volleyball specific training without skill training, general resistance training without skill training and control group of higher secondary level school volleyball players.

6. References

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