IMPACT: International Journal of Research in Applied, Natural and Social Sciences (IMPACT: IJRANSS)
ISSN(E): 2321-8851; ISSN(P): 2347-4580
Vol. 3, Issue 10, Oct 2015, 37-42

EFFECT OF LOW AND HIGH INTENSITY STRENGTH TRAINING ON SPEED AND EXPLOSIVE POWER AMONG MEN VOLLEYBALL PLYERS

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ABSTRACT

The purpose of the study was to find out the effect of low and high intensity strength training on speed and explosive power among men volley ball players. To archive this purpose of the study forty five college men Volley ball players from Alagappa University College of Physical Education, Karaikudi, were randomly selected as subjects. The age of the subjects ranged between 21 to 28 years. The selected subjects were divided into three equal groups of fifteen subjects each. The experimental group 1(n=15) underwent Low intensity strength training, the experimental group 2 (n = 15) underwent high intensity strength training and control group 3 (n= 15) did not participate in any special training programme apart from their regular activities. All the subjects of three groups were tested on selected dependent variables speed and explosive power by using 50mts run and standing broad jump tests respectively. Data for the selected variables were taken at the beginning (pre-test) and at the end of the experimental period (post-test). The Analysis of covariance (ANCOVA) was used for interpreting the results. On the basis of the results the impact of Low and High intensity strength training has significantly contributed to improvement of the selected variables speed and explosive power. Significant improvements on selected criterion variables were also noticed due to Low and High intensity strength training.

KEYWORDS: Strength Training, Speed, Explosive Power, College Men

INTRODUCTION

Unlike many competitive team sports, volleyball does not feature any physical contact between opponents. Volleyball players remain on their own respective sides of the court with a tall net serving as a barrier between the two teams. This basic setup makes volleyball a unique game and influences the necessary traits required to be a good volleyball player (Lidor & Ziv, 2010).

Volleyball players tend to be long, lean athletes. Greater height allows players to play the ball above the net, executing spikes and performing blocks. Taller athletes also cover more court and have longer arms, allowing them to generate more power when striking the ball. Five feet is the minimum height for volleyball players, and while shorter athletes can excel in setting and passing roles, height is a physical trait common in most dominant volleyball players (Lidor & Ziv, 2010; Mouron, 2014; Kneffel, 2008).

Due to the height of the net, which stands 8-feet high for men and 7 feet 4 inches high for women, good volleyball players need exceptional jumping ability. Strong vertical leaps allow players to get above the net for scoring opportunities and defensive plays. Jumping can also play a role in serving by creating more dynamic hits and power (Lidor & Ziv, 2010,

http://www.livestrong.com/article/539677-traits-of-a-good-volleyball-player)

Generally, the more demanding the training, the greater is the fitness benefits. Therefore, the present author was interested in learning whether the effects of training on speed and explosive power are dependent on the magnitude of intensity of strength training. To study this issue, the author compared two different training protocols: a moderate-intensity strength training that is not supposed to depend on aerobic metabolism and a high-intensity intermittent training that is supposed to recruit the anaerobic energy releasing system almost maximally.

Strength training is a type of physical exercise specializing in the use of resistance to induce muscular contraction which builds the strength, anaerobic endurance, and size of skeletal muscles. When properly performed, strength training can provide significant functional benefits and improvement in overall health and well-being, including increased bone, muscle, tendon and ligament strength and toughness, improved joint function, reduced potential for injury, (Shaw & Shaw, 2014) increased bone density, increased metabolism, increased fitness, (Shaw & Shaw, 2005, 2009) improved cardiac function, and improved lipoprotein lipid profiles, including elevated HDL ("good") cholesterol.(Shaw & Shaw, 2008). Training commonly uses the technique of progressively increasing the force output of the muscle through incremental weight increases and uses a variety of exercises and types of equipment to target specific muscle groups. Strength training is primarily an anaerobic activity, although some proponents have adapted it to provide the benefits of aerobic exercise through circuit training. Sports where strength training is central are bodybuilding, weightlifting, power-lifting, strongman, Highland games, shot-put, discus throw, and javelin throw. Many other sports use strength training as part of their training regimen.

METHODOLOGY

The purpose of the study was to find out the Effect of low and high intensity strength training on speed and explosive power among men volley ball players. To archive this purpose of the study forty five college men Volley ball players from Alagappa University College of Physical Education, Karaikudi, were randomly selected as subjects. The age of the subjects ranged between 21 to 28 years. The selected subjects were divided into three equal groups of fifteen subjects each. The experimental group – 1(n 15) underwent low intensity strength training, the experimental group 2 (n 15) underwent high intensity strength training and control group-3 (n 15) did not participate in any special training programme apart from their regular activities. The experimental groups were subjected to the training as per the guidelines of (Vladimir, (1995); Hooks, (1962); Harahayal Singh (1984)Anita Bean (1997). during morning hours for three days for twelve weeks. The low and high intensity strength training was selected as independent variables and the selected variables speed and explosive power as dependent variables. Speed and explosive power were assessed by using 50mts run and standing broad jump respectively. The experimental design selected for this study was pre and post test randomized group design. The data were collected from each subject before and after the training period and statistically analyzed by using analysis of covariance (ANCOVA).

RESULTS AND DISCUSSIONSONS

Speed

Table 1 shows the analyzed data on speed. The pre-test means of speed were 7.27 for experimental group 1, 7.39 for experimental group 2 and 7.68 for control group. The obtained “F” ratio was 2.66 The post-test means of speed were

6.70 for experimental group 1, 6.86 for experimental group 2 and 7.75 for control group. The obtained "F" ratio was 118.216 was higher than the table F-ratio 3.35. The adjusted post-test means of speed were 6.79 for experimental group 1, 6.89 for experimental group 2 and 7.64 for control group. The obtained "F" ratio of 125.639 was higher than the table F-ratio 3.37.

Table 1: Analysis of Covariance of Pre-Test Post Test and Adjusted Post Test on Speed of Different Groups (Scores in Seconds)

	Experimental Group 1	Experimental Group 2	Control Group	Source of Variance	Sum of Squares	Degrees of Freedom	Mean Squares	F
Pre test mean	7.27	7.39	7.68	Between	1.372	2	0.86	2.66
				Within	10.825	42	0.25	
Post test mean	6.70	6.86	7.75	Between	38.799	2	19.40	118*
				Within	6.892	42	0.164	
Adjusted post test mean	6.79	6.89	7.64	Between	41.209	2	13.73	125*
				Within	4.483	41	.109	

* Significant at.05 level of confidence (table F-ratio 3.37)

Since, the analysis of covariance result was significant; to find out the pair wise comparison Scheffe's post hoc test was conducted. The results are presented in table 2.

Table 2: Scheffe's Post Hoc Test of Mean Differences on Speed among Three Groups (Scores in Seconds)

Experimental Group 1	Experimental Group 2	Control Group	Mean Differences	Confidence Interval Value
6.79	6.89	-	0.10	0.75
6.79	-	7.64	0.85*	0.75
-	6.89	7.64	0.75*	0.75

* Significant at.05 level of confidence.

Table 2 shows the Scheffe's Post-Hoc test results. The ordered adjusted final mean difference for speed of experimental groups 1, 2 and control group were tested for significance at 0.05 level of confidence against confidential interval value. The mean differences between experimental group 1 and experimental group 2, experimental group I and control group and experimental group II and control group were 0.10, 0.85 and 0.75 respectively. The confidence interval required to be significant was 0.75Due to low and high intensity strength training speed significantly improved whereas no improvement was seen in control group. However as there is significant difference between experimental group 1 and 2 in favour of high intensity strength training it is found that high intensity training is superior in developing speed.

Explosive Power

Table 3 shows the analyzed data on explosive power. The pre-test means of explosive power were 1.92 for experimental group 1, 2.02 for experimental group 2 and 1.89 for control group. The obtained "F" ratio was 2.33. The post-test means of explosive power were 2.11 for experimental group 1, 2.32 for experimental group 2 and 1.91 for control group. The obtained "F" ratio was 21.05 was higher than the table F-ratio 3.35. The adjusted post-test means of explosive power were 2.13 for experimental group 1, 2.26 for experimental group 2 and 1.95 for control group. The obtained "F" ratio of 23.55 was higher than the table F-ratio 3.37.

Table 3: Analysis of Covariance of Pre-Test Post Test and Adjusted Post Test on Explosive Power of Different Groups (Scores in Meters)

	Experimental Group 1	Experimental Group 2	Control Group	Source of Variance	Sum of Squares	Degrees of Freedom	Mean Squares	F
Pre test mean	1.92	2.02	1.89	Between	0.09	2	0.86	2.33
				Within	0.54	27	0.02	
Post test mean	2.11	2.32	1.91	Between	0.85	2	0.43	21.05*
				Within	0.55	27	0.02	
Adjusted post test mean	2.13	2.26	1.95	Between	0.45	2	0.23	23.55*
				Within	4.483	41	.109	

* Significant at.05 level of confidence (table F-ratio 3.37)

Since, the analysis of covariance result was significant; to find out the pair wise comparison Scheffe's post hoc test was conducted. The results are presented in table 4.

Table 2 shows the Scheffe's Post-Hoc test results. The ordered adjusted final mean difference for explosive power of experimental groups 1, 2 and control group were tested for significance at 0.05 level of confidence against confidential interval value. The mean differences between experimental group 1 and experimental group 2, experimental group I and control group and experimental group II and control group were 0.13, 0.18 and 0.31 respectively. The confidence interval required to be significant was 0.15. Due to low and high intensity strength training explosive power significantly improved whereas no improvement was seen in control group. However as there is significant difference between experimental group 1 and 2 in favour of high intensity strength training it is found that high intensity training is superior in developing explosive power.

Table 4: Scheffe's Post Hoc Test Mean Differences on Explosive Power among Three Groups (Scores in Meters)

Experimental Group I	Experimental Group II	Control Group	Mean Differences	Confidence Interval Value
2.13	2.26	-	0.13	0.15
2.13	-	1.95	0.18*	0.15
-	2.26	1.95	0.31*	0.15

* Significant at.05 level of confidence

CONCLUSIONS

Low and high intensity strength training improves speed and explosive power of college volleyball players. When compared to low intensity strength training is superior than low intensity sports training in improving speed and explosive power.

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