Effects of the Short Term Resistance and Regular Resistance Training in the Development of Lower Body Strength, Leg Explosive Power and Shooting Ability on the Male Basketball Players

Muniraju, M. G[1] & Dr. S. Suthakar[2]

[1]Research Scholar Department of Physical Education, Karpagam University, Coimbatore, Tamilnadu, India.
[2]Head i/c, Department of Physical Education, Karpagam University, Coimbatore, Tamilnadu, India.

Abstract

   To achieve the purpose of the study sixty intercollegiate male basketball players were selected from the St. Claret College Jalahalli, Bangaluru. The subjects' age was ranged from 18-23 years. They were divided into three equal groups with 20 players in each group. The first group underwent the short term resistance training with skill training group with N-20, the second group underwent regular resistance training with skill training group with N-20, the third group acted as a control group with N-20 and they did not perform any specific training. Training the subjects were assessed by the lower body strength (1RM test), leg explosive power (vertical jump test) and shooting ability (Johnson basketball test) conducted before and after the 12 weeks of training regimen. Analysis of variance was used to analyse the data. The result showed that all the training treatments elicited significant improvement in all the variables. The short term resistance with skill training group showed greater improvement in all the variables than the other two groups of short term resistance and skill training group and the control group.

Introduction

Varghese and Shelvam (2014) training and conditioning are the best ways to prepare the players for efficient performance. Fitness is the ability to recognize the needs of a physical task. Basic fitness can be classified in four main cases that is, strength, speed, stamina and flexibility. Resistance training should be developed in nature, individualized and provide a stimulus to all the major muscle groups. Resistance training involves exercises in the muscles while exerting a force against an external load levels. Mazzetti et al., (2000) investigated on the influence of direct supervision of resistance training on strength performance. To fulfill the purpose to compare the variation in maximal strength, power, muscular endurance after twelve weeks of heavy resistance training, which was directly supervised by personal trainer and another non supervisor. The subjects were selected at random from trained men the age changed from 23 – 24 years. Among two groups supervised and non supervised group the training was infused in linear periodized resistance training programmes. These subjects28were tested in their pre and post training on maximal squat, bench press muscular endurance and body composition which found significant both training group. It was also concluded that body mass,

fat mass, fat free mass significantly increased after training in supervision group. There are many different methods in strength training. One form of resistance exercise that has drawn attention is the short term training. The evidence increasing the interest is becoming more apparent with the rise of internet references. The form of training has been presented as a safe and effective means of building strength in both the beginning and advanced weight training (Westcott, 1999). The Short term training, introduced in 1982 by Ken Hutchins. It was developed in as an osteoporosis study with the older women because of the need to utilize a safer speed for the subjects to perform with the resistance exercises. Due to the result in the beginning the new resistance training technique, which also known as the short term training. In a standard Nautilus training protocol, 8-12 repetitions are performed (Westcott, 1999). Each repetition represents a two-second concentric action, one-second pause, followed by four-second eccentric action. The total time for the set requires approximately 55-85 seconds in completion. The short term protocol represents 4-6 repetitions consisting of 10-second concentric phase followed by a four-second eccentric phase. This protocol also requires about 55-85 seconds in completion. One possible advantage of the short term training is involvement of less momentum, resulting in a more evenly applied muscle force throughout the range of motion.

Correspondence
Dr.S.Suthakar
E-mail: suthakar.ku@gmail.com, Ph. +9199650 65096

Methodology

The study was formulated as Pre and Post test random group design, in which sixty subjects were divided into three equal groups. The subjects were assigned at random to one of the three groups, in which the first group(N-20,STRST group) performed the short term resistance training with skill training, the second group (N-20,RRST group) performed the regular resistance training with skill training and the third group (N-20,control group) they did not perform any specific training. The variables such as lower body strength was measured by the 1RM test, leg explosive power was measured by the vertical jump test and shooting ability was measured by the Johnson Basketball Test. The test was occurred before and after 12 weeks regimen. A paired sample of student's t-test was used to determine the significance of the mean differences between the Pre-test to Post-tests values of a variable in the same groups. Analysis of variance (ANOVA) was used to know the significant differences among the group. Statistical significance was accepted as $p \leq 0.05$ level of confidence.

Results

Table I. Results of the t-test between Pre-test and Post-test of Short term resistance training with skill training group

Variables	Pre- test		Post- test		S_{Ed}	MD	t-value
	Mean	SD	Mean	SD			
Lower body strength	46.75	3.15	54.00	2.96	0.97	7.25	7.47*
Leg explosive power	28.50	1.83	32.25	1.87	0.59	3.75	6.36*
Shooting ability	18.10	1.89	23.75	1.04	0.48	5.65	11.75*

From the results of the above table, it can be seen that, the Pre-test and Post-test scores differ statistically in the Lower body strength, leg explosive power and Shooting ability (t=7.47*, 6.36*, 11.75*, $p \leq 0.05$) greater than the table value 2.093 at 95% level and it was significant

Table II. Results of the t-test between Pre-test and Post-test of Regular resistance training with skill training group

Variables	Pre-test		Post- test		S_{Ed}	MD	t-value
	Mean	SD	Mean	SD			
Lower body strength	45.75	2.68	52.30	3.29	0.95	6.55	6.89*
Leg explosive power	30.50	2.31	34.95	2.25	0.72	4.45	6.18*
Shooting ability	17.70	1.73	22.75	1.34	0.48	5.05	10.52*

From the results of the above table, it can be seen that, the Pre-test and Post-test scores differ statistically in the Lower body strength, leg explosive power and Shooting ability (t=6.89*, 6.18*,10.52*, $p \leq 0.05$) greater than the table value 2.093 at 95% level and it was significant.

Table III. Results of the t-test between Pre-test and Post-test of control group

Variables	Pre-test		Post- test		S_{Ed}	MD	t-value
	Mean	SD	Mean	SD			
Lower body strength	46.60	2.24	47.15	2.45	0.74	0.55	0.74
Leg explosive power	29.25	3.43	30.90	3.51	1.10	1.65	1.50
Shooting ability	18.25	1.80	19.00	1.48	0.52	0.75	1.44

From the results of the above table, it can be seen that, the Pre-test and Post-test did not differ statistically in the Lower body strength, leg explosive power and Shooting ability scores (t=0.74, 1.50, 1.44, $p \leq 0.05$) lower than the table value 2.093 at 95% level and it was not significant.

Table IV. Results of ANOVA test of the three groups (short term resistance with skill training, regular resistance with skill training group, control group) of the inter-collegiate basketball Players on Lower body strength.

	STRSTG	RRSTG	CG	SOV	df	SOS	MS	F-value
Pre-test SD	46.75	45.75	46.60	**BG**	2	11.64	5.82	0.75
	3.15	2.68	2.24	**WG**	57	443.20	7.78	
Post-test SD	54.00	52.30	47.15	**BG**	2	508.70	254.45	28.27*
	2.96	3.29	2.45	**WG**	57	513.08	9.00	

Table IV shows that the Pre-test means of lower body strength for the short term resistance with skill training, regular resistance with skill training group, control groups were 46.75± 3.15,45.75±2.68 and 46.60±2.24 respectively. The obtained F ratio value of 0.75 for the Pre-test scores of three groups on the lower body strength was less than the required table value 3.15, hence it was not significant. The Post-test means of the lower body strength for the short term resistance with skill training, regular resistance with skill training group, control groups were 54.00± 2.96, 52.30± 3.29 and 47.15± 2.45 respectively. The obtained F ratio value of 28.27 in the Post-test scores of the three groups on lower body strength was greater than the required table value 3.15 was significant with the df 2 and 57 at 0.05 level of confidence.

Table V. Results of ANOVA test of the three groups (short term resistance with skill training, regular resistance with skill training group, control group) of the inter-collegiate basketball players on Leg explosive power

	STRSTG	RRSTG	CG	SOV	df	SOS	MS	F-value
Pre-test SD	28.50	30.50	29.25	**BG**	2	40.84	20.42	2.84
	1.83	2.31	3.43	**WG**	57	409	7.18	
Post-test SD	32.25	34.95	30.90	**BG**	2	170.10	85.05	11.60*
	1.87	2.25	3.51	**WG**	57	417.59	7.33	

Table V shows that the Pre-test means of leg explosive power for the short term resistance with skill training, regular resistance with skill training group, control groups were 28.50± 1.83, 30.50±2.31and 29.25± 3.43 respectively. The obtained F ratio value of 2.84 in the Pre-test scores of three groups on leg explosive power was less than the required table value 3.15, hence it was not significant. The Post-test means of leg explosive power for the short term resistance with skill training, regular resistance with skill training group, control groups were 32.25±1.87, 34.95± 2.25and 30.90±3.51respectivily.The obtained F ratio value of 11.60 in the Post-test scores of the three groups on leg explosive power was greater than the required table value 3.15 was significant with the df 2 and 57 at 0.05 level of confidence.

Table VI. Results of ANOVA test of the three groups (short term resistance with skill training, regular resistance with skill training group, control group) of the inter-collegiate basketball players on Shooting ability

	STRSTG	RRSTG	CG	SOV	df	SOS	MS	F-value
Pre-test SD	18.10	17.70	18.25	**BG**	2	3.24	1.62	0.47
	1.89	1.73	1.80	**WG**	57	197.10	3.46	
Post-test SD	23.75	22.75	19.00	**BG**	2	250.84	125.42	72.50*
	1.04	1.34	1.48	**WG**	57	98.40	1.73	

Table VI shows that the Pre-test means of Shooting ability for the short term resistance with skill training, regular resistance with skill training group, control groups were 18.10 ± 1.89,17.70±1.73 and 18.25±1.80 respectively. The obtained F ratio value of 0.47 in the Pre-test scores of the three groups in the Shooting ability was less than the required table value 3.15, hence it was not significant. The post-test means of Shooting ability for the short term resistance with skill training, regular resistance with skill training group, control groups were 23.75±1.04, 22.75 ± 1.34and 19.00± 1.48 respectively. The obtained F ratio value of 72.50 in the Post-test scores of three groups on Shooting ability was greater than the required table value 3.15 was significant with the df 2 and 57 at 0.05 level of confidence.

Conclusion
1. The short term resistance with skill training group performed significantly and improved better than the regular resistance with skill training group and control group in the Lower body strength, leg explosive power and Shooting ability.
2. The regular resistance with Skill training group performed significantly and improved better than the control group in the Lower body strength, leg explosive power and Shooting ability.

References
1. S. Kanaka Vishnu Moorthi Dr. S. Suthakar, Dr. V. Perumal.(2016) The Effects of Three Modalities of Resistance Circuit Training on Speed, Muscular Strength, Muscular Strength and Endurance of Collegiate Male Kabaddi Players, international journal of innovative research & development., 5-5, 282-287.
2. Dr.S.Suthakar et. al, (2016) An Effective Approach through Strength, Endurance and Skill Training Program Combinations on Muscular Strength and Endurance and Explosive Power of Male Basketball Players., International Journal of Innovative Research and Development., 5,4-218-220.
3. S.Suthakar et. al,(2016) Effect of Volleyball Specific Resistance Training and Skill Training Packages on the Development of Flexibility and Muscular Strength and Endurance on the Higher Secondary Level School Boys., International Journal of Innovative research and development ,5,4-225-230.
4. R. Ashok Kumar K. Babu , S. Suthakar.,(2016) 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., international journal of innovative research and development,5,4-231-235.
5. Chu, 1998; Fleck and Kraemer, 2004). (Adams et al., 1992; Fatouros et al., 2000; Polhemus et al., 1981)
6. Chu et al., 2006; Marginson et al., 2005). For example, Matavulj et al., 2001 found that plyometric training improved jumping performance in teenage basketball players and Kotzamanidis, 2006.
7. Westcott, W. (1999). The scoop on super slow strength training. Idea Personal Trainer, Nov-Dec, 37-42.
8. Westcott, W. L., Winett, R. A., Anderson, E. S., Wojcik, J. R., Loud, R. L. R., Cleggett, E., & Glover, S. (2001). Effects of regular and slow speed resistance training on muscle strength. Journal of Sports Medicine and Physical Fitness, 41, 154-158.

Please cite this article as: Muniraju, M. G & Dr. S. Suthakar. Effects of the Short Term Resistance and Regular Resistance Training in the Development of Lower Body Strength, Leg Explosive Power and Shooting Ability on the Male Basketball Players. *International Journal of Recent Research and Applied Studies*, 2016, 3, 8(12), 51-54.

54