Effects of the Short Term Resistance and Regular Resistance Training in the Development of Muscular Strength Endurance, Upper Body Strength and Passing Ability of the Male Basketball Players

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Abstract

  The purpose of the study sixty male basketball players of inter collegiate level were selected from St. Claret College Jalahalli, Bangalore. The subject's age ranged from 18-23 years. There were divided into three equal groups in each 20 players. The first group underwent (short term resistance training and skill training group) N-20, the second group underwent (regular resistance training and skill training group) N-20, the third group act as control group (N-20) and they did not perform any specific training. The collection of data was done prior to and after the completion. The subjects were tested on selected physical fitness and skill performance variables namely muscular strength endurance (sit-ups test), Upper body test (1RM test) and passing 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 variables. The short term and skill training group showed greater improvement in all the variables then the other two groups of regular resistance and skill training group and the control group. The resistance training about effects of high intensity and volume resistance exercise results in muscle harm caused by metabolic and mechanical factors(Proske and Morgan 2001; Clarkson and Hubel 2002). Progressive resistance exercise is an effective method for developing muscular strength and for the sports and fitness purposes has application especially for injury prevention and rehabilitation. Muscle strength has been defined as the most voluntary muscle torque or more recently, as the ability of the neuromuscular system to make force.

Keywords: Muscular strength endurance, Upper body strength, passing ability, Regular resistance training, short term training, stretching exercise, Skill training.

Introduction

  Resistance training is any exercise that causes the muscles to contract against an external resistance with the expectation of increases in strength, tone, mass, and/or endurance. The external resistance can be dumbbells, rubber exercise tubing, your own body weight, bricks, bottles of water, or any other object that causes the muscles to contract. Weight training is use of resistance other then the weight of the body. Generally, it is used to develop muscular power. It also develops muscular endurance, elasticity and co- ordination. Resistance training is a good method to increase neuromuscular capacity. It is used by people to enhance their levels of strength, power and muscular hypertrophy (Deschenes and Kraemer2002; Kraemer and Ratamess 2004). The game of basketball is very complicated in terms of skills and teamwork. In this game, every player should have the ability of the fundamental skills such as

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dribbling, passing, shooting, rebounding, and defense. High levels of performance, otherwise known as the playing ability in basketball, depend on proficiency in the fundamental skills. Performance high level of a basket ballplayer depends on fundamental skills (Varghese and Shelvam 2014). The aim of this research was to evaluate some cases such as the effects of an 8-week training programs with constrained and unconstrained path chest press machine son 1-RM, selected arm and shoulder girdle muscles activity levels during the push movement performed on the different machines, and the transfer of the training effects from one machine to the other. This study evaluated and compared the effectiveness of two different off-season, short-term basketball training programs on physical and technical abilities of young basketball players. Twenty-seven adolescent basketball players (14.7+/-0.5 years; Tanner stage: 3.5+/-0.5) were randomly divided into a specialized basketball training group (SP, n=10), a mixed basketball plus conditioning training group (MX, n=10) and a control group (n=7). Training included five sessions per week (100-120 min each) and was performed for 4 weeks. Maximal oxygen uptake was

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similarly improved after SP (4.9+/-1.8%) and MX (4.9+/-1.4%), but there was no effect on ventilator threshold. Peak and mean power output measured during the Wingate test were also improved by a similar magnitude after SP (21+/-5%) and MX (15+/-6%). Trunk muscle endurance was equally increased (SP: 23+/-4%, MX: 25+/-5%), but arms endurance was improved significantly more after MX (50+/-11%) compared to SP (11+/-14%, p<0.05). Performance in four basketball technical skills was similarly increased (by 17-27%) in both groups, with a tendency for greater improvement of the SP groups in the technical skills of shooting and passing. These results indicate that a SP basketball training program, performed exclusively on-court was as effective as a MX training program in terms of aerobic and anaerobic fitness improvement. Furthermore, the decrease of the total on-court training time in the MX group resulted in a tendency for a smaller improvement of basketball technical skills. In conclusion, both SP and MX training are equally effective in order to limit and/or reverse the detraining effects that occur during the off-season in basketball.

Methodology

Randomly sixty male basketball players of inter collegiate level were selected from St. Claret College Jalahalli, Bangalore. The subject's age ranged from 18-23 years. There were divided into three equal groups in each 20 players. The subjects were assigned at random to one of the three groups, in which the first group (N-20,STT group) performed the short term resistance training with skill training, the second group(N-20,RRT group) performed the regular resistance training with skill training and third group (N-20,control group) and they did not perform any specific training. The variable such as the Muscular strength endurance was measured by sit-up test, the Upper body strength was measured by 1RM test and the passing ability was measured by Johnson basketball test. The test was occurred before and after 12 weeks regimen.

Analysis of the data

A paired sample of student's t-test was used to determine the significance of the mean differences between the pre-test to post-test values of a variable in the same group. 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 ANOVA test of the three groups (short term resistance and skill training, regular resistance and skill training group, control group) at inter-collegiate basketball players in respect to the muscular strength endurance scores

	STRSG	RRSTG	CG	SOV	Df	SOS	MS	F value
Pre-test Mean	19.70	21.25	19.50	BG	2	1.83	0.96	0.17
SD	2.57	1.70	2.25	WG	57	294.15	5.16	
Post-test Mean	25.65	24.25	19.95	BG	2	335.06	167.53	27.20*
SD	3.39	1.64	1.84	WG	57	351.34	6.16	
S_{Ed}	0.96	0.53	0.65					
MD	5.95	3.00	0.45					
t-value	6.20*	5.66*	0.69					

STRSTG (short term resistance and skill training group), RRSTG (regular resistance and skill training group), CG (control group).

From the results of the above table I it can be seen that, the pre-test and post-test mean values statistically in the short term resistance and skill training, regular resistance and skill training group on Muscular strength endurance scores (t=6.20, 5.66, $p \leq 0.05$) were greater than table value 2.093at 95% level of significant. The results indicates that the 't' values showed significant improved on the Muscular strength endurance. As shown in Table I, obtained F ratio of 0.17 on pre-test means of groups is not significant at 0.05 levels. This shows that there were no significant difference among the means of the groups at the initial stage and the random assignment of the groups was successful the obtained F ratio on post-test means is 27.20*, which was significant at 0.05 level, the obtained F value was greater than the required F value of 3.15 to be significant at 0.05 level.

Figure I. Bar diagram showing Pre-test and Post-test means of STRSTG, RRSTG and CG on Muscular strength endurance
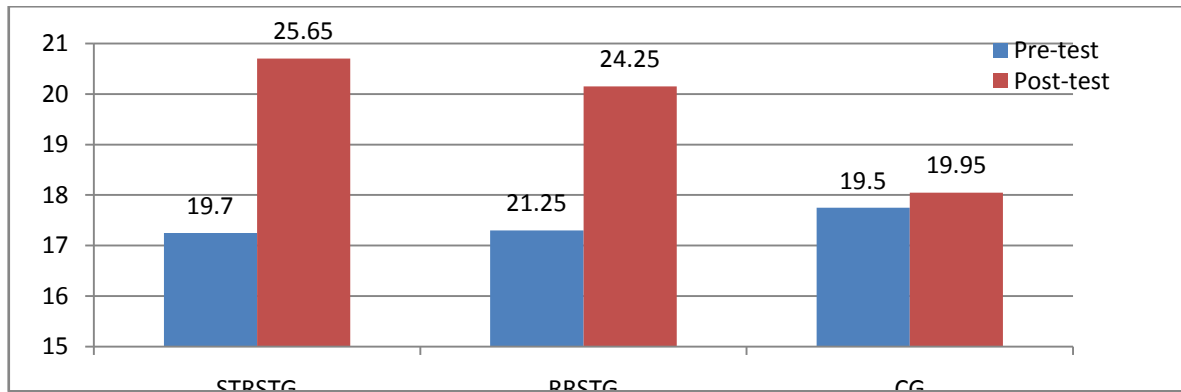

Table II. Results of the ANOVA test of the three groups (short term resistance and skill training, regular resistance and skill training group, control group) at inter-collegiate basketball players in respect to the Upper body strength scores

	STRSTG	RRSTG	CG	SOV	Df	SOS	MS	F value
Pre-test Mean	55.45	57.25	55.15	BG	2	51.60	25.80	
SD	4.54	6.43	5.04	WG	57	1749.90	30.70	0.84
Post-test Mean	60.45	63.80	56.35	BG	2	556.90	278.45	
SD	4.35	6.67	4.99	WG	57	1766.70	30.99	8.99*
S_{Ed}	1.41	2.07	1.58					
MD	5.00	6.55	1.20					
t-value	3.55*	3.16*	0.76					

STRSTG (short term resistance and skill training group), RRSTG (regular resistance and skill training group), CG (control group).

From the results of the above table II it can be seen that, the pre-test and post-test mean values statistically in the short term resistance and skill training, regular resistance and skill training group on Upper body strength scores (t=3.55, 3.16, p ≤ 0.05) were greater than table value 2.093at 95% level of significant. The results indicates that the 't' values showed significant improved on the Upper body strength. As shown in Table II, obtained F ratio of 0.84 on pre-test means of groups was not significant at 0.05 levels. This shows that there is no significant difference among the means of the groups at the initial stage and the random assignment of the groups was successful the obtained F ratio on post-test means is 8.99, which is significant at 0.05 level, the obtained F value was greater than the required F value of 3.15 to be significant at 0.05 level.

Figure II. Bar diagram showing Pre-test and Post-test means of STRSTG, RRSTG and CG on Upper body strength
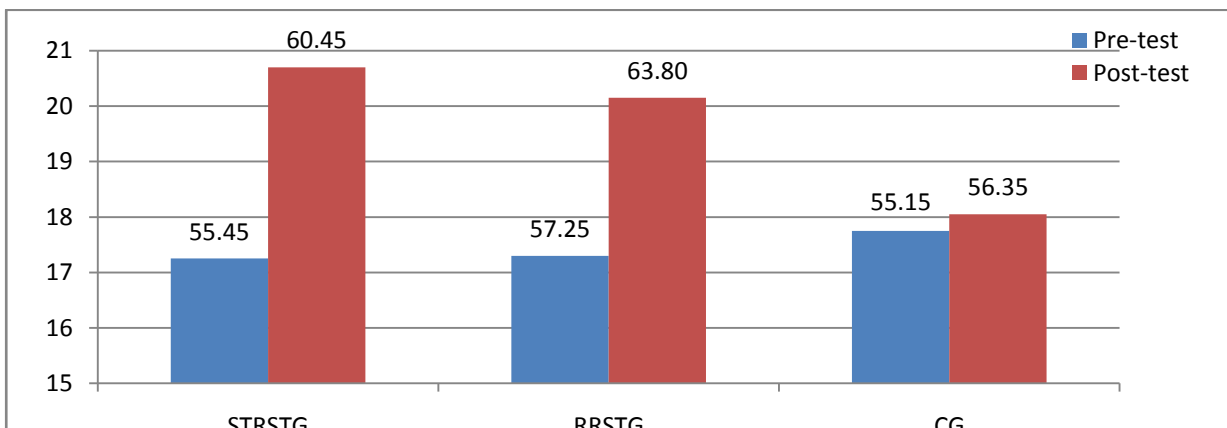
Table III. Results of the ANOVA test of the three groups (short term resistance and skill training, regular resistance and skill training group, control group) at inter-collegiate basketball players in respect to the passing ability scores

	STRSTG	RRSTG	CG	SOV	Df	SOS	MS	F-value
Pre-test Mean	17.25	17.30	17.75	BG	2	3.02	1.51	1.09
SD	1.25	1.05	1.13	WG	57	78.81	1.38	
Post-test Mean	20.70	20.15	18.05	BG	2	59.30	29.65	42.36*
SD	0.74	0.72	0.97	WG	57	40.14	0.70	
S_{Ed}	0.32	0.28	0.33					
MD	3.65	2.85	0.30					
t-value	11.41*	10.18*	0.91					

From the results of the above table III it can be seen that, the pre-test and post-test mean values statistically in the short term resistance and skill training, regular resistance and skill training group on passing ability scores (t=11.41, 10.18, p ≤ 0.05) were greater than table value 2.093at 95% level of significant. The results indicates that the 't' values showed significant improved on the passing ability. As shown in Table III, obtained F ratio of 1.09 on pre-test means of groups was not significant at 0.05 levels. This shows that there was no significant difference among the means of the groups at the initial stage and the random assignment of the groups was successful the obtained F ratio on post-test means is 42.36, which is significant at 0.05 level, the obtained F value was greater than the required F value of 3.15 to be significant at 0.05 level.

Figure III. Bar diagram showing Pre-test and Post-test means of STRSTG, RRSTG and CG on Passing ability
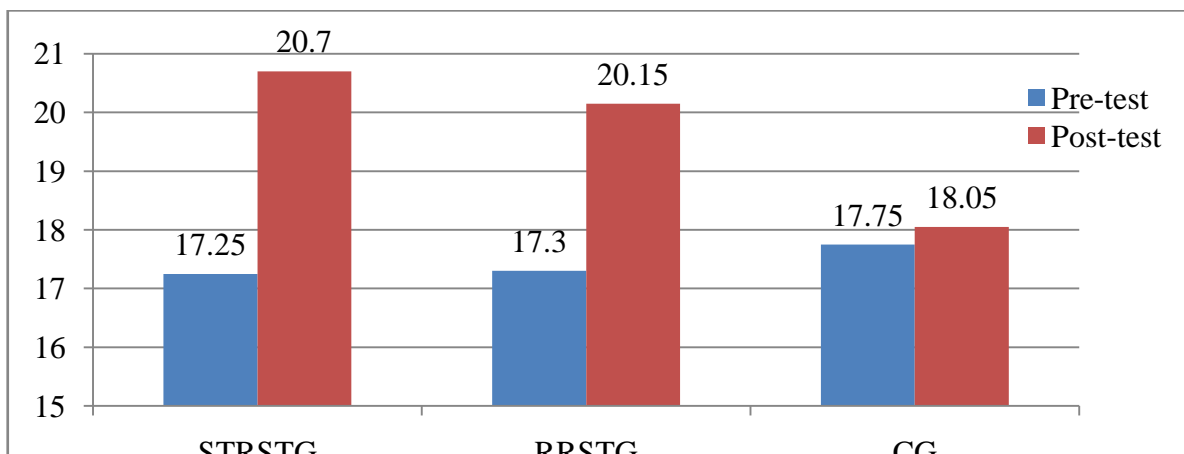
Discussion

During my study the results showed significant improvement of passing ability due to the short term resistance with skill training. This study also proved that passing ability of the basketball players was significantly improved due to the regular resistance with Skill training. The results of this study proved that Muscular strength endurance, Upper body strength of the basketball players was significantly improved due to the short term resistance with skill training and regular resistance with Skill training.

Conclusion

1. The short term resistance and skill training group improved significantly on Muscular strength endurance, Upper body strength and passing ability of male basketball players.

2. *The regular resistance and Skill training group improved significantly on Muscular strength endurance, Upper body strength and passing ability of male basketball players.

3. The short term resistance with skill training group would significantly improved better than the regular resistance with Skill training group and control group on the development of physical fitness variable and skill related parameters on male basketball players.

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