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Effect of Weight Track Training, Plyometric Training and Combination of Weight Track Plyometric Training and Martial Arts Training on Selected Physical Fitness Variables of Inter-Collegiate Men Basketball Players

Physical Education

KEYWORDS : 1.Weight track training 2. Plyometric training 3.Martial arts training 4.Speed 5.Muscular strength and endurance 6.Cardio respiratory endurance.

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ABSTRACT

The purpose of the study was to find out the effect of weight track training, plyometric training and combination of weight track plyometric training and martial arts training on selected physical fitness variables of inter-collegiate men basketball players, to achieve that 80 subjects aged from 18 to 25 years from affiliated college of Bharathiar University Coimbatore, Tamilnadu were selected, subjects (N = 80) were divided into four equal groups namely experimental group – I, experimental group – II, experimental group – III and control group. In the three days per week, the experimental group – I (n= 20) underwent weight track training, experimental group – II underwent plyometric training, experimental group – III underwent weight track plyometric and martial arts training, control group was not given any specific training. The following criterion variables were chosen namely, speed, muscular strength and endurance and cardio respiratory endurance. They were assessed before and after the training period of 12 weeks. The analysis of co-variance (ANACOVA) was used to determine any significant difference was present among the four groups of the dependent variables. The study revealed that the selected dependent variables such as speed, muscular strength and endurance and cardio respiratory endurance have significant improvement due do influence of weight track training plyometric and martial arts training.

Introduction

Basketball is a athletic sport, usually played on an indoor court in which two competing teams of five layers each attempt to score by throwing an inflated ball so that it descends through one of two baskets suspended, at each end of the court, above their heads. The team scoring the most such throws, through field goals or foul shots, wins the game. Because of its continuous action and frequent scoring, basketball is one of the most popular spectator as well as participant sports in the world.

Martial Arts Training

Martial arts training will vary greatly from discipline to discipline. By understanding the physiological demands and movement patterns within the specific disciplines, and profiling elite martial artists, a suitable sport-specific conditioning program can be designed. Not all exercises and modes of training are suitable for all martial artists. Due to different form of equipment's handling the drills and the type of fitness also varies from one to one this creates a thinking to prepare a program and evaluate their fitness to a great extend, in general whatever may be the equipment handled but the fitness forms the base for all martial drills so that fitness is evaluated to progress the martial arts through training and planning. While they may be studied for various reasons, martial arts share a single objective: to defeat a person physically or to defend oneself from physical threat. In fact, martial artists have a confidence, attitude, and awareness that make actual confrontations rare. The path or the way of martial arts may lead the student into other disciplines, or through increasing levels in one's primary discipline. Unlike many sports or studies, there is no end to the path through martial arts.

Statement of Problem

The purpose of the study was to find out the effect of weight track training, plyometric training and combination of weight track plyometric training and martial arts training on selected physical fitness variables of inter-collegiate men basketball players.

Hypothesis

It washypothesized that there would be significant improvement on physical fitness variables speed, muscular strength and endurance and cardio respiratory endurance due to weight track, plyometricand martial arts training program.

Methodology

To achieve the purpose of the study 80 players were selected as subjects from Bharathiar university coimbatore,Tamilnadu. The selected subjects were divided into four groups (n - 20) named as experimental groups I,II,III and another group was control group ,which did not underwent any specific training. Experimental group – I underwent weight track training (WTG), experimental group – II underwent plyometric training (PTG), experimental group – III underwent weight track plyometric and martial arts training group (WPMTG), control group was not given any specific training (CG). The following criterion variables were chosen namely, speed, muscular strength and endurance and cardio respiratory endurance. They are assessed before and after the training period of 12 weeks. The analysis of co-variance (ANACOVA) was used to determine any significant difference among the four groups in the dependent variables. These four groups were compared, when the obtained the 'F' ratio for the adjusted post-test mean was found to be significant, the scheff'e post hoc test was applied to determine the paired mean differences.

Result and Discussions

Table – I

Analysis of Variance Pre – Test Means of Three Experimental Groups for Speed, Muscular Strength and Endurance and Cardio Respiratory EndurancePre - Test

Variables	Source of variance	Sum of Square	Df	Means Square	F-ratio
Speed	Between Sets	0.17	3	0.05	1.66
	Within Sets	2.45	76	0.03	
Muscular Strength and Endurance	Between Sets	42.21	3	14.07	1.21
	Within Sets	881.24	76	11.59	
Cardio Respiratory Endurance	Between Sets	92104.07	3	30701.35	0.98
	Within Sets	2373812.73	76	31234.37	

Table indicates the 'F' ratio were 1.66 (speed) 1.21 (Muscular Strength and Endurance) 0.98 (Cardio Respiratory Endurance). when comparing with the required critical value (2.72). For degrees of freedom 3, 76, it was found to be less and insignificant. Thus the F – ratio's found in the pre – test mean differences provided a confidence that the samples hailed from some population and devoid of sampling bias.

Table – II
Analysis of Variance Post – Test Means of Three Experimental Groups For Speed, Muscular Strength and Endurance and Cardio Respiratory Endurance Post – Test

Variables	Source of variance	Sum of Square	Df	Means Square	F- ratio
Speed	Between Sets	0.95	3	0.303	15.00*
	Within Sets	1.75	76	0.02	
Muscular Strength and Endurance	Between Sets	820.72	3	273.57	19.54*
	Within Sets	1064.62	76	14.00	
Cardio Respiratory Endurance	Between Sets	507162.4.8	3	169054.13	6.04*
	Within Sets	2126011	76	27973.82	

Table indicates the 'F' ratios were 15.00 (speed) 19.54 (Muscular Strength and Endurance) 6.04 (Cardio Respiratory Endurance).When comparing with the required critical value (2.72). For degrees of freedom 3, 76, it was found to be greater and significant. Thus the F – ratio's found in the pre – test mean differences provided a confidence that the samples hailed from some population and devoid of sampling bias.

Table –III
Analysis of Co - Variance on adjusted Post - Test Means of Three Experimental Groups for Speed, Muscular Strength and Endurance and Cardio Respiratory Endurance

Variables	Source of variance	Sum of Square	Df	Means Square	Obtained F-ratios
Speed	Between Sets	0.67	3	0.22	27.5*
	Within Sets	0.60	75	0.008	
Muscular Strength and Endurance	Between Sets	551.21	3	183.73	48.47*
	Within Sets	284.97	75	3.79	
Cardio Respiratory Endurance	Between Sets	248781.52	3	82927.17	43.99*
	Within Sets	141364.87	75	1884.86	

The obtained 'F'ratio's on criterion variables among the four groups were statistically significant since they exceeded the need F – ratio (2.72) for degrees of freedom 3, 75 at 0.05 level of confidence.

Scheffe's post hoc test

Training	Speed	Muscular Strength and Endurance	Cardio Respiratory Endurance
Weight track Training Group	6.37	45.80	2121.13
Plyometric Training Group	6.49	46.91	2210.15
Weight track Plyometric and Martial Arts Training Group	6.53	46.71	2132.61
Control Group	6.60	43.11	1930.14
Mean difference	WTG-PTG = 0.12* WTG-WPMTG = 0.16* WTG-CG = 0.23* PTG-WPMTG = 0.04 PTG-CG = 0.11* WPMTG-CG = 0.07*	WTG-PTG = 1.11 WTG-WPMTG = 0.91 WTG-CG = 2.69* PTG-WPMTG = 0.2 PTG-CG = 3.8* WPMTG-CG = 3.6*	WTG-PTG = 89.02* WTG-WPMTG = 11.48 WTG-CG = 190.99* PTG-WPMTG = 77.54* PTG-CG = 280.01* WPMTG-CG = 202.47*
Confidence level	0.06	1.24	63.15

Scheffe's post hoc test
Scheffe's post hoc test shoes that adjusted post-test mean difference on speed between weight track training group, plyometric training group and weight track plyometric and martial arts training group with control group are 0.23,0.11,0.07,the difference is higher than the CI of 0.06.shows that all forms of trainings improves the speed.

But in the comparison of improvement between, plyometric training group and weight track plyometric and martial arts training group shows insignificant difference says that both the trainings are in equally best for improving speed. But with weight track training group and weight track plyometric and martial arts training group, weight track training group is better than weight track plyometric and martial arts training group for developing speed.

Adjusted mean difference on muscular strength and endurance in all three groups with the control group are 2.69, 3.8, 3.6.the difference is higher than the C.I of1.24, that shows that all trainings improves muscular strength and endurance, when comparing the level of improvement between trainings of weight track training group with weight track plyometric and martial arts training group and plyometric training group with weight track plyometric and martial arts training group ,they are insignificant ,they are equally valuable with its compared training. For improving muscular strength and endurance and when comparing the improvement in weight track group and plyometric training group is better the weight track group for muscular strength endurance improving.

For cardio respiratory endurance the mean difference of all groups with control group are 190.99,280.01 & 202.47.the difference is higher than the CI of 63..27,shows that all training improves cardio respiratory endurance .The improvement difference between weight track training group and weight track plyometric and martial arts training group could not found as they are insignificant. While comparing plyometric training group is better than weight track training for cardio respiratory endurance improvement and the other two comparisons between trainings are not significant.

Discussions and Findings
Speed improves in the all the forms of combination of weight track training group, plyometric training group and weight track plyometric and martial arts training group. All these methods were better for improvement of speed, but the betterment difference of one combination over another combination could not be found, all are equally valuable for speed.

Muscular strength and endurance improves in all the forms of the combinations of weight track training group, plyometric training group and weight track plyometric and martial arts training group, but difference of improvement could not be found between weight track with plyometric training group and weight track plyometric and martial arts training group, weight track training group and plyometric training group.

Since their improvement from the control group were closer to one another in the 12 weeks training. In paring the weight

track training group with weight track plyometric and martial arts training group. Weight track plyometric and martial arts training group is a better one to be used for muscular strength and endurance development when compared with weight track training group.

Cardio respiratory endurance improves in all the combinations of training and better performance of improvement between plyometric training group and weight track plyometric and martial arts training group could not be found significantly, so this shows that for improving Cardio respiratory endurance both are the appropriate combination of training, next to that order of appropriate combination for Cardio respiratory endurance improvement are weight track plyometric and martial arts training group then, weight track plyometric training group and then weight track training group, weight track plyometric and martial arts training group is the best training combination than all others for Cardio respiratory endurance improving.

Conclusions

Speed can be improved in all combinations of weight track training group, plyometric training group and weight track plyometric and martial arts training group. For inter collegiate men basketball players. All these combinations were can be advisable for improving speed.

Muscular strength and endurance can be improved in all combinations but it shows better improvement in weight track plyometric and martial arts training group then compared with weight track training for improving muscular strength and endurance, weight track plyometric and martial arts training group can be used as appropriate method for men basketball players.

Cardio respiratory endurance can be improved in all combinations of training but weight track plyometric and martial arts training group is the better one than weight track training and plyometric training group next to weight track plyometric and martial arts training group, weight track training, plyometric training group is important for cardio respiratory endurance improvement for inter collegiate men basketball players.

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