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Outcomes of anaerobic training, skill related and combined training on selected physical variables among women basketball players

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Abstract

Anaerobic and Skill related training is a deliberate attempt to optimize physical competence in recognized fitness domains. Sportsmen can come up with an exercise routine that will help you target the muscles you wish to develop. The objective of these exercises can be described as getting bigger, faster, and stronger. The exercise exerts fast-twitch skeletal muscles that naturally display anaerobic metabolic characteristics. Thus, manipulating highly relevant combined training is the motto of the study. This research aims to assess the effect of 12 weeks Anaerobic Training, Skill Related and Combined Training on Selected Physical Variables Among Women Basketball Players. To accomplish the purpose of the current study sixty women basketball players who were active in-game age ranged from 17 to 25 years old randomly selected from University of Madras, Chennai. They are randomly divided and employed into four equal groups, consist of 15 members each. Group-I underwent Anaerobic Training, Group II underwent skill related training, group III underwent combined Training and group IV acted as Control Group. The anaerobic training, skill related training and combined training has selected as the independent variable. Speed, agility and Muscular Endurance have chosen as dependent variables, and all dependent variables measured by standardized test item as 50 meters dash, shuttle run and sit up. Analysis of Covariance (ANCOVA) would be applied to find out the significant mean differences. In all the cases, the 0.05 level of significance has fixed to test the Alpha level. The results of the study exposed that the experimental group III had finished a significant difference in all the selected variables such as Speed, agility and Muscular endurance to compare the experimental and control groups.

Keywords: Anaerobic Training, Skill Related Training, Combined Training, Speed, Agility, Muscular Endurance

1. Introduction

Training Method For most sports, training probably has a greater effect on performance than nutrition, equipment, psychological state or any other modifiable factor. Training is a complex behavior, mainly because it is performed in a time frame that range from seconds to years. Sports people use numerous terms to describe the characteristic so this temporal dimension of training. Single human movements, which occur in a second or two are combined and repeated to make a training bout or workout, a period of more-or-less uninterrupted physical activity. Workouts many occupy a few minutes or hours and may be continuous exercises, a set of reps or repeated movements, or a set of sat. A complete training session usually lasts an hour or two and consists of one or more workouts (Satpathy, 2005).

2. Combination of Training

Combined training is an association of two or more trainings united for the furtherance of performance. Combined training also aims to expose the unexposed area of an isolated training. Further, it acts as to counterbalance or compensate a training programme to become a wholesome training regime.

2.1 Anaerobic Training

Anaerobic exercise is a form of exercise in which energy for the activities performed comes from the sugars present in the muscle cells and not from oxygen in the blood. In fact, anaerobic means "in the absence of oxygen". Such exercises are basically of short duration and intense.

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Examples of anaerobic exercise include sprinting and weight training. Because the effort required for such exercise is intense, it cannot be sustained for long. There are many factors that contribute to muscle fatigue during anaerobic exercise, chief amongst them is the production of lactic acid when sugars are broken down. The accumulation of lactic acid in the blood is a limiting factor to the extent we can carry out high-intensity activity without oxygen.

3. Methodology

3.1 Subjects

For the achievement of the objective of the current study, the investigator selected a total number of sixty (N=60) Women Basketball players had been chosen randomly from University of Madras, Chennai. The participants' age ranged from 17 to 25 years. The subjects were voluntarily participated to conduct the study. They were simplified into four groups. Each group consists of 15participants, which were assumed to be apt for the study.

3.2 Selection of Variables and Tests

Anaerobic training profoundly influenced by physical aspects. It had found from the literature that these variables might have a significant effect on Anaerobic training. Hence, the investigator seriously got interested to know whether there was any significant enhancement or not in the following variables:

Table 1: Selection of Tests

Variables	Test
Speed	50 Meters Dash
Agility	Shuttle Run
Muscular Endurance	Sit Up

3.3 Experimental design

The experimental treatment of Anaerobic Training, Skill Related and Combined Training allocated to the experimental

groups. The experimental method was used for this study was pre-test and post-test random group design in the present study. The selected subjects randomly assigned to experimental and control groups of 15 each. Group-I underwent Anaerobic Training, Group II underwent skill related training, group III underwent combined Training and group IV acted as Control Group. The groups tested on selected criterion variables Speed, agility and muscular endurance before and after the training programme.

3.4 Treatment

Throughout the training period, the experimental groups underwent Anaerobic Training, skill related training and combined Training respectively for five days per week for twelve weeks. The workout lasted to 60 minutes/session including dynamic warming up, Basketball-specific training and warming down periods. Control group were instructed not to participate in any strenuous physical exercise and specialized training throughout the training programme.

3.5 Statistical Procedure

The pre-test and post-test random group design used in the present study. The data collected from groups before and after completion of the training period on selected criterion variables. The selected variables were statistically examined for significant differences if any, by applying the analysis of covariance (ANCOVA). To find the significance 0.05 level Alpha fixed.

4. Results

The subjects were tested on selected criterion variables such as speed, agility and muscular endurance at before and immediately after the training period. The analysis of covariance on speed, agility and muscular endurance of Anaerobic Training, skill related training and combined Training and control groups are analyzed and presented in given below tables respectively.

Table 2: Computation of Analysis of Covariance on Speed (Scores In Seconds)

Test	Anaerobic training	Skill related training	Combined training	Control group	Source of variance	Sum of square	Df	Mean square	“F”
Pre	8.28	8.27	8.29	8.28	B	1.08	3	1.096	1.92
					W	2.135	56	1.038	
Post	7.60	7.71	6.80	8.32	B	6.043	3	2.014	32.65
					W	3.455	56	1.062	
Adjusted	7.62	7.69	6.89	8.30	B	6.043	3	2.014	32.70
					W	3.388	55	.064	

Table F-ratio at 0.05 level of significance for 3, 56 and 3, 55 (df) =2.77 *Significant

Table-II shows that the pretest means scores of speed anaerobic training was 8.28 seconds, skill related training group was 8.27 seconds, combined group was 8.28 seconds and control group was 8.32 seconds. The posttest means showed differences due to experimental training and mean values recorded were 7.60, 7.69, 6.89 and 8.32 seconds respectively. The obtained F value on pre-test scores 1.92 was less than the required F value of 2.77 to be significant at 0.05 level. This proved that there was no significant difference between the experimental and control groups indicating that the process of randomization of the groups was perfect while assigning the subjects to groups. The post test scores analysis proved that there was significant difference between the

groups, as they obtained F value 32.65 was greater than the required F value of 2.77. This proved that the differences between the posttest means of the subjects were significant. Taking into consideration the pre and post test scores among the groups, adjusted mean scores were calculated and subjected to statistical treatment. The obtained F value of 32.70 was greater than the required F value of 2.77. This proved that there was a significant difference among the means due to the experimental trainings on speed. The results clearly indicating that combined anaerobic and skill related training was significantly better than the anaerobic training, skill related training in improving the speed of the women basketball players.



Fig 1: Bar Diagram on Ordered Means of Speed (Scores in seconds)

Table 3: Computation of Analysis of Covariance on Agility (Scores in seconds)

Test	Anaerobic training	Skill related training	Combined training	Control group	Source of variance	Sum of square	Df	Mean square	“F”
Pre	17.69	18.14	17.85	18.04	B	1.812	3	1.604	1.75
					W	7.112	56	1.127	
Post	17.03	17.20	15.90	17.80	B	4.119	3	2.373	29.23*
					W	2.631	56	0.047	
Adjusted	17.10	17.25	15.98	17.82	B	4.218	3	1.406	30.53*
					W	2.532	55	.046	

Table F-ratio at 0.05 level of significance for 3, 56 and 3, 55 (df) =2.77 *Significant

Table-III shows that the pretest means scores of agility anaerobic training was 17.69 seconds, skill related training group was 18.14 seconds, combined group was 17.85 seconds and control group was 18.04 seconds. The posttest means showed differences due to experimental training and mean values recorded were 17.10, 17.20, 15.90 and 17.80 seconds respectively. The obtained F value on pretest scores 1.75 was less than the required F value of 2.77 to be significant at 0.05 level. This proved that there was no significant difference between the experimental and control groups indicating that the process of randomization of the groups was perfect while assigning the subjects to groups. The post test scores analysis proved that there was significant difference between the

groups, as they obtained F value 29.23 was greater than the required F value of 2.77. This proved that the differences between the posttest means of the subjects were significant. Taking into consideration the pre and post test scores among the groups, adjusted mean scores were calculated and subjected to statistical treatment. The obtained F value of 30.53 was greater than the required F value of 2.77. This proved that there was a significant difference among the means due to the experimental trainings on agility. The results of the study clearly indicating that combined anaerobic and skill related training was significantly better than the anaerobic training, skill related training in improving the agility of the women basketball players.

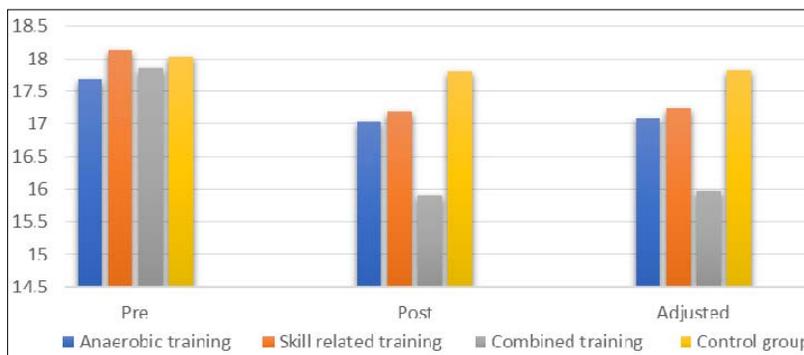


FIG 2: Bar Diagram on Ordered Means of Agility (Scores in seconds)

Table 4: Computation Of Analysis of Covariance on Muscular Endurance (Scores in counts)

Test	Anaerobic training	Skill related training	Combined training	Control group	Source of variance	Sum of square	Df	Mean square	“F”
Pre	55.98	56.92	56.49	55.56	B	15.865	3	5.288	1.65
					W	455.493	56	8.134	
Post	59.22	61.18	66.26	56.68	B	537.734	3	179.245	51.55*
					W	194.713	56	3.477	
Adjusted	59.25	61.08	66.23	56.77	B	518.595	3	172.865	50.97*
					W	186.529	55	3.391	

Table F-ratio at 0.05 level of significance for 3, 56 and 3, 55 (df) =2.77 *Significant

Table -IV shows that the pretest means scores of muscular endurance anaerobic training was 55.98 counts, skill related training group was 56.92 counts, combined group was 56.49 counts and control group was 55.56 counts. The posttest means showed differences due to experimental training and mean values recorded were 59.22, 61.18, 66.26 and 56.68 counts respectively.

The obtained F value on pre-test scores 1.65 was less than the required F value of 2.77 to be significant at 0.05 level. This proved that there was no significant difference between the experimental and control groups indicating that the process of randomization of the groups was perfect while assigning the subjects to groups.

The post test scores analysis proved that there was significant difference between the groups, as they obtained F value 51.55

was greater than the required F value of 2.77. This proved that the differences between the posttest means of the subjects were significant.

Taking into consideration the pre and post test scores among the groups, adjusted mean scores were calculated and subjected to statistical treatment. The obtained F value of 50.97 was greater than the required F value of 2.77. This proved that there was a significant difference among the means due to the experimental trainings on muscular endurance.

The results of the study clearly indicating that combined anaerobic and skill related training was significantly better than the anaerobic training, skill related training in improving the muscular endurance of the women basketball players.

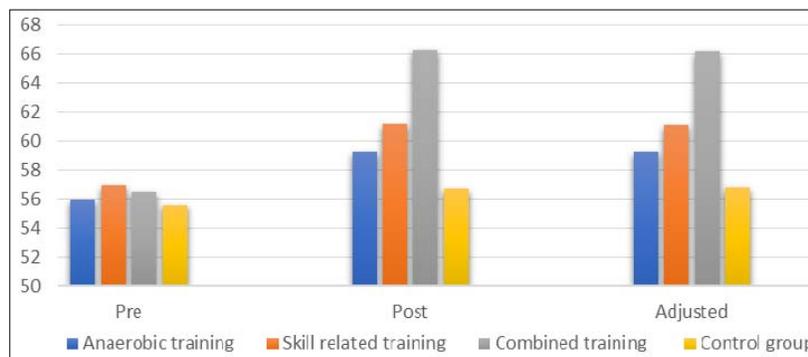


Fig 3: Bar Diagram on Ordered Means of Muscular Endurance (Scores In Counts)

5. Conclusion

By results and findings, it has concluded that twelve weeks Anaerobic Training, skill related training and combined Training improved speed, agility and muscular endurance among basketball women players. The results of the study concluded that the combined training had significant improvement when compared to skill related training and control groups.

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