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ORIGINAL ARTICLE

EFFECTS OF YOGIC TRAINING AEROBIC TRAINING AND DETRAINING ON MUSCULAR STRENGTH OF COLLEGE MALE STUDENTS

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Abstract:

The purpose of the study is to find out the effects of yogic training, aerobic training and detraining on muscular strength of college male students. For this study 45 (forty five) healthy untrained subjects were selected on random basis. The students were selected from Dr.R.K.Shanmugam College of Arts & Science, Indili, Kallakurichi T.K Villupuram (Dt) in Tamil Nadu, India. The subject's age were ranged between 18 to 21 years. The selected subjects were divided into three groups, each group consist of fifteen (15) subjects. Group I underwent yogic training, group II underwent aerobic training and group III acted as a control group. The selected Asanas and Pranayama were given to yogic training group. The selected aerobic dance steps assigned for aerobic training group. The duration of the training period was stipulated to 12 weeks for 5 days per week (45 minutes). Control group was kept under control without any training. The muscular strength was measured by using a Hand grip dynamometer tests. Prior to and after the end of practice period all the subjects were tested on selected muscular strength. The results of pre, mid, post, first, second, and third cessation test were compared statistically analyzed by using two-way factorial analysis of variance with last factor repeated measures. The 'F' ratio value was statistically analyzed and tested for significant difference at 0.05 level of confidence.

KEYWORDS:

Yogic Training, Aerobic Training, Detraining Muscular Strength, Hand Grip Dynamometer .

INTRODUCTION

The best way to keep physical activity and exercises a permanent part of one's life is to make it fun and enjoyable. If people are given different options of what they can do and have easy access to those options, they are more likely to participate in physical activity and exercises. This allows people to have a positive attitude towards physical fitness. It's also helpful if people are knowledgeable about the rewards of physical activity and exercises. The challenge facing the fitness professional is how to best manipulate, progressively overload and inter mix intensity, duration and frequency with a variety of modes of activity to help the clients reach their goals. Fortunately a number of different training programs are available to the fitness professional including yogic training and aerobic training. Detraining refers to the cessation of regular physical training, the effect of stop training are quite minor compared with those from immobilization. In general, the greater the gains during training, the greater the decrease during detraining simply because, the well trained person has more to lose than the untrained person. Detraining causes muscle atrophy, which is accompanied by loss in muscular strength. However muscles require only minimal stimulation to retain these qualities during periods of reduced activity.

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MUSCULAR STRENGTH

Muscular strength is an important for individuals to perform daily activities and tasks such as taking out the trash moving furniture or appliances, or changing a tire and lifting, pulling or pushing objects. Many tasks involve use of the upper body and lines. In an emergency a strong individual has a better change of avoiding serious injury then compared with a weak person. In many cases upper body strength can make the difference between a serious injury and escaping harm.

Muscular strength is defined as the ability of the muscles to produce force at high intensities over short intervals. It is a conditional ability, and it depends largely on the energy liberation processes in the muscles. Strength the most important motor ability in sports is a direct product of muscles contraction. All movements in sports are caused by muscles contractions and therefore, strength is a part and parcel of all motor abilities, technical skills and tactical actions. Strength training is good for general health, good posture and prevention of injuries.

METHODOLOGY

The purpose of the study is to find out the effects of yogic training aerobic training and detraining on muscular strength of college male students. Forty five healthy, untrained students were selected from Dr.R.K.Shanmugam College of Arts & Science, Indili, Kallakurichi T.K, Villupuram Dt, Tamil Nadu. The subject's age ranged from 18 to 21 years. The selected subjects were divided into three groups with fifteen subjects in each group selected randomly, with two experimental groups and one control group. Experimental Group I underwent the yogic training in selected asanas and pranayama. Experimental Group II underwent the selected aerobic dance with music's programme. The training periods of experimental groups were twelve weeks, five days per week with duration of 45 minutes. Control group did not undergo any training programme rather than their routine work. The muscular strength was measured by using a Hand grip dynamometer test. The data were collected on muscular strength for all the three groups before the experimental period (pre test), after six weeks of training (mid test) and after twelve weeks of the training period (post test) respectively. After training period data collection the detraining period data were collected on muscular strength once in ten days for three times. During this period the subjects were not allowed to participate in any training programme.

In order to test the effect of training, the collected data from all the three groups before, during and after experimentation on muscular strength was statistically analyzed by using two-way (3x3) factorial analysis of variance with last factor repeated measures.

The data collected from the three groups at post experimentation and detraining (three cessation) on muscular strength was statistically analyzed by using two way (3x4) factorial ANOVA with last factor repeated measures.

Whenever, two-way factorial ANOVA with last factor repeated the obtained 'F' ratio interaction values are found to be significant, the simple effect test is used. When the obtained 'F' ratio value in the simple effect is found significant, the Scheffe's test is applied as post hoc test to determine which of the paired mean had significant differences. In all the cases the level of confidence is fixed at 0.05 to test the significance.

TABLE 1
THE MEAN AND STANDARD DEVIATION VALUES ON LEFT AND RIGHT HAND GRIP STRENGTH OF PRETEST, MID TEST, POST TEST, FIRST CESSATION, SECOND CESSATION AND THIRD CESSATION PERIOD SCORES OF YOGIC, AEROBIC AND CONTROL GROUPS

	Groups		Pre test	Mid test	Post test	First Cessation	Second Cessation	Third Cessation
Left Hand Grip Strength	Yogic group	Mean	17.60	18.87	19.87	19.13	18.73	18.00
		S.D	1.805	1.685	1.685	1.356	1.387	1.558
	Aerobic group	Mean	17.67	19.33	20.53	19.53	18.67	17.73
		S.D	1.291	1.047	0.915	0.915	0.975	1.223
	Control group	Mean	17.87	17.93	18.00	18.00	18.13	18.13
		S.D	1.302	1.223	1.000	1.000	0.915	0.915
Right Hand Grip Strength	Yogic group	Mean	16.80	18.13	19.13	18.47	17.87	17.40
		S.D	1.699	1.552	1.552	1.457	1.407	1.502
	Aerobic group	Mean	16.93	18.87	19.93	18.67	17.93	17.20
		S.D	1.981	1.246	1.223	1.290	1.335	1.612
	Control group	Mean	16.87	16.93	17.07	17.13	17.13	17.20
		S.D	1.457	1.335	1.280	1.187	1.187	1.320

The table 1 showed that the pre, mid, post, first cessation, second cessation and third cessation test of mean and standard deviation values on left and right hand grip strength for yogic, aerobic and control groups respectively during training and detraining periods.. The data on left and right hand grip strength during training period have been analyzed by two-way factorial ANOVA (3 x 3) with repeated measures on last factor and the results are presented in table 2.

TABLE 2
TWO WAY ANALYSIS OF VARIANCE WITH LAST FACTOR REPEATED MEASURES ON LEFT AND RIGHT HAND GRIP STRENGTH OF CONTROL AND EXPERIMENTAL GROUPS AT THREE DIFFERENT TESTING PERIODS

	Source of Variance	Sum of Squares	df	Mean Squares	Obtained "F" ratio
Left Hand Grip Strength	Rows (Groups)	36.326	2	18.163	3.398*
	Error	224.489	42	5.345	
	Columns (Testing Periods)	69.793	2	34.896	303.935*
	Interaction (Groups X Testing Periods)	31.230	4	7.807	68.000*
	Error	9.644	84	0.115	
Right Hand Grip Strength	Rows (Groups)	61.170	2	30.585	4.796*
	Error	267.867	42	6.378	
	Columns (Testing Periods)	77.615	2	38.807	214.46*
	Interaction (Groups X Testing Periods)	33.185	4	8.296	45.848*
	Error	15.200	84	0.181	

*Significant at 0.05 level

Table values required for significance at 0.05 level with df 2, 42; 2, 84 and 4, 84 are 3.222, 3.106 and 2.482 respectively

From the table 2 it is clear that the obtained 'F' ratio for groups is 3.398 and 4.796 which is greater than the table value of 3.222 with df 2 and 42 required for significance at .05 level of confidence. The result of the study indicates that, significant differences exist among experimental and control groups irrespective of different stages of testing on left and right hand grip strength.

The obtained 'F' ratio for different stages of testing is 303.935 and 214.46 which is greater than the table value of 3.106 with df 2 and 84 required for significance at .05 level of confidence. The result of the study indicates that left and right hand grip strength differs significantly among different stages of testing irrespective of groups.

The obtained 'F' ratio value of interaction (groups x testing periods) is 68.000 and 45.848 which is greater than the table value of 2.482 with df 4 and 84 required for significance at .05 level of confidence. The result of the study shows that significant difference exists among groups at each test and also significant difference between tests for each group on left and right hand grip strength.

The results of the study indicate that significant differences exist in the interaction effect (between groups and tests) on left and right hand grip strength. Since the interaction effect is significant, the simple effect test has been applied as follow up test and it is presented in table 3.

TABLE 3
THE SIMPLE EFFECT SCORES OF GROUPS (ROWS) AT THREE DIFFERENT STAGES OF TESTING (COLUMNS) ON LEFT AND RIGHT HAND GRIP STRENGTH

	Source of Variance	Sum of Squares	df	Mean Squares	Obtained "F" ratio
Left Hand Grip Strength	Groups and Pre test	0.289	2	0.145	0.001
	Groups and Mid test	7.622	2	3.811	33.139*
	Groups and Post test	25.867	2	12.934	112.465*
	Tests and Control Group	0.067	2	0.335	2.913
	Tests and Yogic Group	19.356	2	9.678	84.157*
	Tests and Aerobic Group	31.089	2	15.545	135.170*
	Error	9.644	84	0.115	
Right Hand Grip Strength	Groups and Pre test	0.067	2	0.034	0.185
	Groups and Mid test	14.289	2	7.145	39.472*
	Groups and Post test	32.822	2	16.411	90.669*
	Tests and Control Group	0.156	2	0.078	0.431
	Tests and Yogic Group	20.556	2	10.278	56.785*
	Tests and Aerobic Group	34.689	2	17.345	95.826*
	Error	15.200	84	0.181	

*Significant at 0.05 level of confidence
Table values required for significance at 0.05 levels with df 2 and 84, is 3.106.

Table 3 shows that the obtained 'F' ratio values for groups at mid, post test and tests of yogic and aerobic group are higher than the table value of 3.106 with df 2 and 84 required for significance at 0.05 level of confidence. The result of the study indicates that significant difference on left and right hand grip strength exists between groups at mid and post test. The result of the study indicates that there is significant increase on left and right hand grip strength among the tests of yogic and aerobic group. Whenever, the obtained 'F' ratio value is found to be significant, the Scheffe's post hoc test is applied to find out the paired mean differences, and it is presented in tables 4 and 5.

TABLE 4
SCHEFFE'S TEST FOR THE DIFFERENCES BETWEEN THE PAIRED MEANS OF DIFFERENT GROUPS AT EACH TESTING PERIODS DURING TRAINING ON LEFT AND RIGHT HAND GRIP STRENGTH

	Testing Periods	Yogic Group	Aerobic Group	Control Group	Mean Difference	Confidence Interval
Left Hand Grip Strength	Pre test	17.60	-	17.87	0.27	0.313
		-	17.67	17.87	0.20	0.313
		17.60	17.67	-	0.07	0.313
	Mid test	18.87	-	17.93	0.94*	0.313
		-	19.33	17.93	1.40*	0.313
		18.87	19.33	-	0.46*	0.313
	Post test	19.87	-	18.00	1.87*	0.313
		-	20.53	18.00	2.53*	0.313
		19.87	20.53	-	0.66*	0.313
Right Hand Grip Strength	Pre test	16.80	-	16.87	0.07	0.393
		-	16.93	16.87	0.06	0.393
		16.80	16.93	-	0.13	0.393
	Mid test	18.13	-	16.93	1.20*	0.393
		-	18.87	16.93	1.94*	0.393
		18.13	18.87	-	0.74*	0.393
	Post test	19.13	-	17.07	2.06*	0.393
		-	19.93	17.07	2.86*	0.393
		19.13	19.93	-	0.80*	0.393

* Significant at 0.05 level.

From the table 4 it was found that the significant increase mean difference values on left and right hand grip strength of the yogic and aerobic group during the training period. Since the calculated value is higher than the required value 0.05 level of confidence interval. Therefore there is significant difference among the three groups which denotes that both the experimental groups are significantly better on left and right hand grip strength than the control group. Finally the result reveals that the aerobic group is superior to yogic group and the yogic group is better than the control group.

TABLE 5
SCHEFFE'S TEST FOR THE DIFFERENCES BETWEEN THE PAIRED MEANS OF EACH GROUP AT DIFFERENT TESTING PERIODS DURING TRAINING ON LEFT AND RIGHT HAND GRIP STRENGTH

	Group	Pre test	Mid test	Post test	Mean Difference	Confidence Interval
Left Hand Grip Strength	Yogic Group	17.60	18.87	-	1.27*	0.313
		17.60	-	19.87	2.27*	0.313
		-	18.87	19.87	1.00*	0.313
	Aerobic Group	17.67	19.33	-	1.66*	0.313
		17.67	-	20.53	2.86*	0.313
		-	19.33	20.53	1.20*	0.313
Right Hand Grip Strength	Yogic Group	16.80	18.13	-	1.33*	0.393
		16.80	-	19.13	2.33*	0.393
		-	18.13	19.13	1.00*	0.393
	Aerobic Group	16.93	18.87	-	1.94*	0.393
		16.93	-	19.93	3.00*	0.393
		-	18.87	19.93	1.06*	0.393

* Significant at 0.05 level.

Table 5 reveals it was found that the significant increase mean difference values on left and right hand grip strength of the yogic and aerobic group during the pre test to mid test, pre test to post test and mid test to post test. Since the calculated value is higher than the required value 0.05 level of confidence interval. The result reveals that the left and right hand grip strength is found to be more effective during the pre test to mid test when compared to the mid to post test period.

The data on left and right hand grip strength during detraining(cessation) period have been analyzed by two-way factorial ANOVA (3 x 4) with repeated measures on last factor and the results are presented in table 6

TABLE 6
TWO WAY ANALYSIS OF VARIANCE WITH LAST FACTOR REPEATED MEASURES ON LEFT AND RIGHT HAND GRIP STRENGTH CONTROL AND EXPERIMENTAL GROUPS AT FOUR DIFFERENT TESTING PERIODS

	Source of Variance	Sum of Squares	df	Mean Squares	Obtained "F" ratio
Left Hand Grip Strength	Rows (Groups)	37.744	2	18.872	3.646*
	Error	217.400	42	5.176	
	Columns (Testing Periods)	54.594	3	18.198	125.987*
	Interaction (Groups X Testing Periods)	37.456	6	6.243	43.218*
	Error	18.200	126	0.144	
Right Hand Grip Strength	Rows (Groups)	58.211	2	29.106	4.128*
	Error	296.10	42	7.050	
	Columns (Testing Periods)	52.061	3	17.354	114.480*
	Interaction (Groups X Testing Periods)	34.589	6	5.765	38.030*
	Error	19.100	126	0.152	

*Significant at .05 level
Table values required for significance at 0.05 level with df 2, 42; 3, 126 and 6, 126 are 3.22, 2.68 and 2.17 respectively

From the table-6, the obtained 'F' ratio for groups is 3.646 and 4.128, which is greater than the table value of 3.222 with df 2 and 42 required for significance at .05 level of confidence. The result of the study indicates that, significant differences exist among experimental and control groups irrespective of different stages of testing on left and right hand grip strength.

The obtained 'F' ratio for different stages of testing is 125.987 and 114.480, which is greater than the table value of 2.68 with df 3 and 126 required for significance at .05 level of confidence. The result of the study indicates that left and right hand grip strength differs significantly among different stages of testing irrespective of groups.

The obtained 'F' ratio value of interaction (groups x testing periods) is 43.218 and 38.030 which is greater than the table value of 2.17 with df 6 and 126 required for significance at .05 level of confidence. The result of the study shows that significant difference exists among groups at each test and also significant difference between tests for each group on left and right hand grip strength.

The results of the study indicate that significant differences exist in the interaction effect (between groups and tests) on left and right hand grip strength. Since the interaction effect is significant, the simple effect test has been applied as follow up test and it is presented in table 7.

TABLE 7
THE SIMPLE EFFECT SCORES OF GROUPS (ROWS) AT FOUR DIFFERENT STAGES OF TESTING (COLUMNS) ON LEFT AND RIGHT HAND GRIP STRENGTH

	Source of Variance	Sum of Squares	df	Mean Squares	Obtained "F" ratio
Left Hand Grip Strength	Groups and Post test	25.867	2	12.934	85.089*
	Groups and First Cessation	9.489	2	4.745	31.214*
	Groups and Second Cessation	1.622	2	0.811	5.336*
	Groups and Third Cessation	0.622	2	0.311	2.046
	Tests and Control Group	0.89	3	0.297	2.060
	Tests and Yogic Group	9.111	3	3.037	21.090*
	Tests and Aerobic Group	21.483	3	7.161	49.729*
	Error	18.200	126	0.144	
Right Hand Grip Strength	Groups and Post test	32.822	2	16.411	107.967*
	Groups and First Cessation	10.422	2	5.211	34.283*
	Groups and Second Cessation	2.956	2	1.478	9.724*
	Groups and Third Cessation	0.200	2	0.100	0.658
	Tests and Control Group	0.44	3	0.147	0.965
	Tests and Yogic Group	8.461	3	2.820	18.555*
	Tests and Aerobic Group	20.378	3	6.793	44.689*
	Error	19.100	126	0.152	

*Significant at .05 level of confidence
Table values required for significance at 0.05 levels with df 2 and 126, & 3 and 126 are 3.069 and 2.679 respectively

Table 7 shows that the obtained 'F' ratio values for groups at post, first and second cessation test and tests of yogic and aerobic group are higher than the table value of 3.106 with df 2 and 126 required for significance at 0.05 level of confidence. The result of the study indicates that significant difference on left and right hand grip strength exists between groups at post, first and second cessation test. The result of the study indicates that there is significant decrease on left and right hand grip strength among the tests of yogic and aerobic group. Whenever, the obtained 'F' ratio value is found to be significant, the Scheffe's post hoc test is applied to find out the paired mean differences, and it is presented in tables 8 and 9

TABLE 8
SCHEFFE'S TEST FOR THE DIFFERENCES BETWEEN THE PAIRED MEANS OF DIFFERENTGROUPS AT EACH TESTING PERIODS DURING TRAINING CESSATION ON LEFT AND RIGHT HAND GRIP STRENGTH

	Source of Variance	Sum of Squares	df	Mean Squares	Obtained "F" ratio
Left Hand Grip Strength	Groups and Post test	25.867	2	12.934	85.089*
	Groups and First Cessation	9.489	2	4.745	31.214*
	Groups and Second Cessation	1.622	2	0.811	5.336*
	Groups and Third Cessation	0.622	2	0.311	2.046
	Tests and Control Group	0.89	3	0.297	2.060
	Tests and Yogic Group	9.111	3	3.037	21.090*
	Tests and Aerobic Group	21.483	3	7.161	49.729*
	Error	18.200	126	0.144	
Right Hand Grip Strength	Groups and Post test	32.822	2	16.411	107.967*
	Groups and First Cessation	10.422	2	5.211	34.283*
	Groups and Second Cessation	2.956	2	1.478	9.724*
	Groups and Third Cessation	0.200	2	0.100	0.658
	Tests and Control Group	0.44	3	0.147	0.965
	Tests and Yogic Group	8.461	3	2.820	18.555*
	Tests and Aerobic Group	20.378	3	6.793	44.689*
	Error	19.100	126	0.152	

*Significant at .05 level of confidence
Table values required for significance at 0.05 levels with df 2 and 126, & 3 and 126 are 3.069 and 2.679 respectively

Table 7 shows that the obtained 'F' ratio values for groups at post, first and second cessation test and tests of yogic and aerobic group are higher than the table value of 3.106 with df 2 and 126 required for significance at 0.05 level of confidence. The result of the study indicates that significant difference on left and right hand grip strength exists between groups at post, first and second cessation test. The result of the study indicates that there is significant decrease on left and right hand grip strength among the tests of yogic and aerobic group. Whenever, the obtained 'F' ratio value is found to be significant, the Scheffe's post hoc test is applied to find out the paired mean differences, and it is presented in tables 8 and 9

TABLE 8
SCHEFFE'S TEST FOR THE DIFFERENCES BETWEEN THE PAIRED MEANS OF DIFFERENTGROUPS AT EACH TESTING PERIODS DURING TRAINING CESSATION ON LEFT AND RIGHT HAND GRIP STRENGTH

	Testing Periods	Yogic Group	Aerobic Group	Control Group	Mean Difference	Confidence Interval
Left Hand Grip Strength	Post test	19.87	-	18.00	1.87*	0.350
		-	20.53	18.00	2.53*	0.350
		19.87	20.53	-	0.66*	0.350
	First Cessation	19.13	-	18.00	1.13*	0.350
		-	19.53	18.00	1.53*	0.350
		19.13	19.53	-	0.40*	0.350
	Second Cessation	18.73	-	18.13	0.50*	0.350
		-	18.67	18.13	0.54*	0.350
		18.73	18.67	-	0.06	0.350
	Third Cessation	18.00	-	18.13	0.13	0.350
		-	17.73	18.13	0.20	0.350
		18.00	17.73	-	0.27	0.350
Right Hand Grip Strength	Post test	19.13	-	17.07	2.06*	0.360
		-	19.93	17.07	2.86*	0.360
		19.13	19.93	-	0.80*	0.360
	First Cessation	18.47	-	17.13	1.34*	0.360
		-	18.67	17.13	1.54*	0.360
		18.47	18.67	-	0.20	0.360
	Second Cessation	17.87	-	17.13	0.74*	0.360
		-	17.93	17.13	0.80*	0.360
		17.87	17.93	-	0.06	0.360
	Third Cessation	17.40	-	17.20	0.20	0.360
			17.20	17.20	0.00	0.360
		17.40	17.20	-	0.20	0.360

* Significant at 0.05 level.

Table 8 reveals that the mean difference on left and right hand grip strength is found to be significant for the three groups during training cessation periods. In order to find out which of the following groups has decreased significantly on left and right hand grip strength, the Scheffe's test for the difference between the paired means has been calculated and given in the below table 9.

TABLE 9
SCHEFFE'S TEST FOR THE DIFFERENCES BETWEEN THE PAIRED MEANS OF EACH GROUP AT DIFFERENT TESTING PERIODS DURING TRAINING CESSATION ON LEFT AND RIGHT HAND GRIP STRENGTH

	Group	Post test	First Cessation	Second Cessation	Third Cessation	Mean Difference	Confidence Interval
Left Hand Grip Strength	Yogic Group	19.87	19.13	-	-	0.74*	0.350
		19.87	-	18.73	-	1.14*	0.350
		19.87	-	-	18.00	1.87*	0.350
		-	19.13	18.73	-	0.40*	0.350
		-	19.13	-	18.00	1.13*	0.350
		-	-	18.73	18.00	0.73*	0.350
	Aerobic Group	20.53	19.53	-	-	1.00*	0.350
		20.53	-	18.67	-	1.86*	0.350
		20.53	-	-	17.73	2.80*	0.350
		-	19.53	18.67	-	0.86*	0.350
		-	19.53	-	17.73	1.80*	0.350
		-	-	18.67	17.73	0.94*	0.350
Right Hand Grip Strength	Yogic Group	19.13	18.46	-	-	0.67*	0.360
		19.13	-	17.87	-	1.26*	0.360
		19.13	-	-	17.40	1.73*	0.360
		-	18.46	17.87	-	0.59*	0.360
		-	18.46	-	17.40	1.06*	0.360
		-	-	17.87	17.40	0.47*	0.360
	Aerobic Group	19.93	18.67	-	-	1.26*	0.360
		19.93	-	17.93	-	2.00*	0.360
		19.93	-	-	17.20	2.73*	0.360
		-	18.67	17.93	-	0.64*	0.360
		-	18.67	-	17.20	1.47*	0.360
		-	-	17.93	17.20	0.73*	0.360

* Significant at 0.05 level.

From the table 9 it was found that significant decrease of yoga and aerobic group on left and right hand grip strength during in post to first, second and third cessation periods of 0.05 level of confidence interval. It is concluded that the yogic and aerobic group have gradually decreased on left and right hand grip strength during the different cessation period. The mean difference of aerobic group is higher decrease than the yogic group. The increase, decrease on left and right hand grip strength is graphically represented in figure 1 to 4.

FIGURE 1
THE PRETEST MID TEST AND POST TEST MEAN VALUES OF YOGIC AEROBIC AND CONTROL GROUPS ON RIGHT HAND GRIP STRENGTH

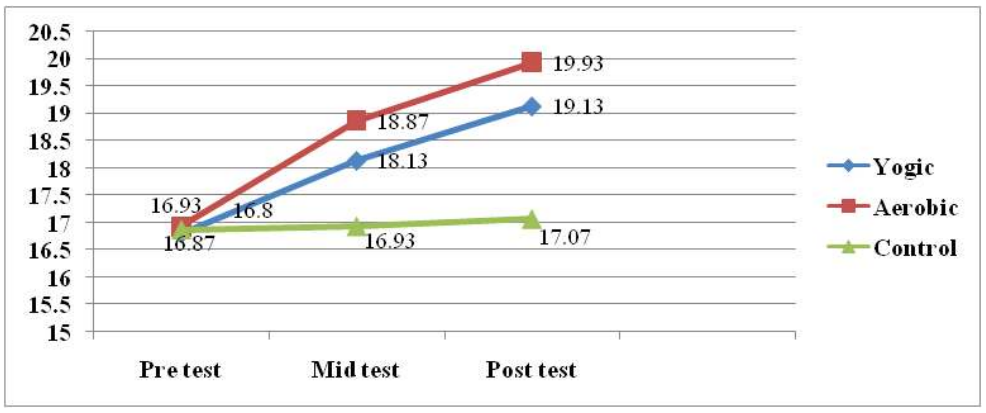


FIGURE 2
THE POST TEST, FIRST CESSATION, SECOND CESSATION AND THIRD CESSATION PERIOD SCORES OF YOGIC AEROBIC AND CONTROL GROUPS ON RIGHT HAND GRIP STRENGTH

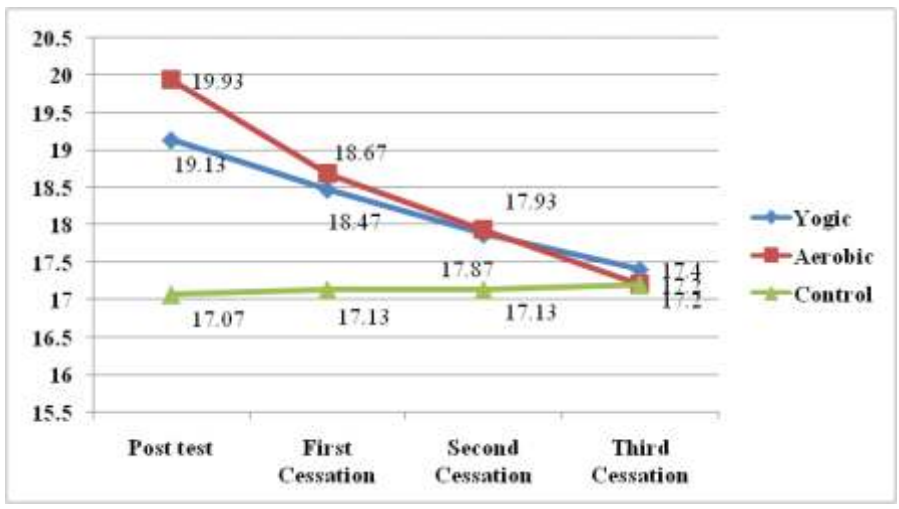


FIGURE 3
THE PRETEST MID TEST AND POST TEST MEAN VALUES OF YOGIC AEROBIC AND CONTROL GROUPS ON LEFT HAND GRIP STRENGTH

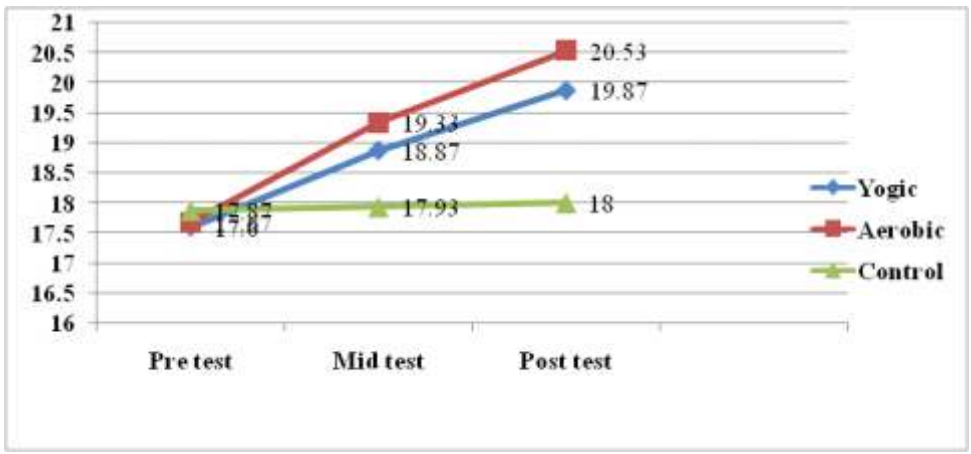
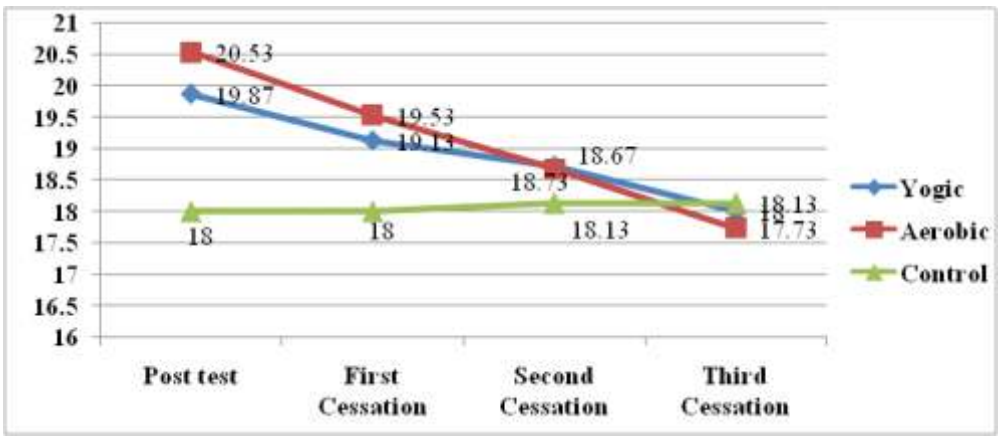


FIGURE 4
THE POST TEST, FIRST CESSATION, SECOND CESSATION AND THIRD CESSATION PERIOD SCORES OF YOGIC AEROBIC AND CONTROL GROUPS ON LEFT HAND GRIP STRENGTH



DISCUSSION ON FINDINGS

The results of the present study indicates that both the experimental groups have significantly increased in the muscular strength (Right and Left hand grip strength) when compared to the control group during training period. The result of the study is in consonance with Madanmohan et.al, (2008), Chen et.al, (2009) Tran et.al, (2001) and Agro (1988).

Further, the improvement of muscular strength is significantly higher the aerobic group when compared to the yogic group during training periods. The result of the study is in consonance with Ravikumar (2010) and Punithavathi (2010). But during the training cessation periods Muscular strength is both the experimental groups have significantly reduced in a gradual manner for first and second cessation period. Finally aerobic training group is seen that the muscular strength has significantly reduced when compared to the yogic group during training cessation periods.

Since the investigators have not come across similar studies on yogic training and aerobic training followed by detraining period above the variables, it was unable for him to mention relevant studies. But some scholars have conducted studies on circuit training followed by detraining, plyometric training followed by detraining and weight training followed by detraining on some physical and physiological variables.

CONCLUSIONS

It was concluded from the result of the study that muscular strength can be improved significantly due to twelve of yogic training and aerobic training during mid and post test period. The aerobic training group is better improved compare than the yogic training group, during the testing periods namely pre to mid and mid to post test. The pre to mid test results reveal to be better than mid to post test period. The effect on muscular strength for both the training groups has gradually decreased up to second cessation period during the detraining period, the effect of muscular strength of aerobic training group has decreased faster when compare to the yogic training group.

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