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EFFECT OF VARIED FREQUENCY AND DURATION OF AEROBIC DANCING ON SELECTED MOTOR ABILITY COMPONENTS AND PHYSIOLOGICAL VARIABLES OF HANDBALL PLAYERS

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Abstract:

The purpose of the study was to determine the effect of varied frequency and duration of aerobic dancing on selected motor ability components and physiological variables of handball players. To achieve the purpose of the present study, Eighty Untrained healthy school boys students of Kendriya Vidyalaya Higher Secondary School, Kalpetta, Kerala, India were selected as subjects at random and their ages ranged from 14 to 17 years. The subjects were divided into four equal groups of twenty each. Group-I acted as Experimental Group-I (Low Duration and Low Frequency Aerobic Training), Group-II acted as Experimental Group-II (Medium Duration and Medium Frequency Aerobic Training), Group-III acted as Experimental Group-III (High Duration and High Frequency Aerobic Training) Group-IV acted as and Control Group. The following criterion variables were chosen namely speed in 50 Meters Run of seconds and Resting Pulse Rate using Stethoscope in Beats/Minute. The requirement of the experiment procedures, testing as well as exercise schedule was explained to the subjects so as to get full co-operation of the effort required on their part and prior to the administration of the study. The result of the study revealed that the experimental group from the obtained f-ratio, it was observed that LDLFATG, MDMFATG and HDHFATG groups showed significant difference on increasing speed and decreasing in resting pulse rate.

Keys Words: Varied Frequency, Aerobic Dancing, Speed, Resting Pulse Rate & Handball

Introduction:

Training is a programme of exercises designed to improve the skills and increase the energy capacity of an athlete for a particular event. In sports, the word 'training' is generally understood to be a synonym for doing physical exercise. In a narrow sense, training is doing physical exercises for the improvement of performance or general fitness**.** Sport training is a basic preparation for better performance through physical exercise. It is based on scientific principles and aims at education and performance enhancement. Sports activities consist of motor movement and action and their success depends to a great extent on how correctly they are performed. Techniques of training and improvement of tactical efficiency play a vital role in a training process.

Intensity, the qualitative component of work an athlete performs in a given time, is also an important component of training. The more work the athlete performs per unit of time, the higher the intensity. Intensity is a function of the strength of the nerve impulses the athlete employs in training. The strength of a stimulus depends upon the load, speed of performance, and the variation of intervals or rest between repetitions. The last, important element of intensity is the psychological strain of an exercise. Muscular work and the involvement of central nervous system involvement through maximum concentration determine the intensity during training or competition. Intensity varies according to the specifies of the sport because the level of intensity varies in most sports and games. So, it is important to establish and use varying degrees of intensity in training. Several methods are available to measure the strength of the stimuli and thus the intensity.

Nature of Handball:

Handball is an ideal synthesis of the three fundamental athletic disciplines of running, jumping and throwing. Therefore it is not only a purely competitive sport but also a fine sport to be taken up with advantage by many for purposes of training and health. The player must be able to start quickly, he must be a persevering runner, he must be able to skillfully deceive his opponent, he must be able to swiftly pick up the ball or catch it in the air, he must pass the ball with precision to his team mates and he must be able to execute all sorts of throws; in short, his body, his arms and his legs will have to be harmoniously trained. As the name of the game suggests, hands play the most important role; hands being naturally the deftest members of the body, the growing popularity of Handball is easily explained. Many kinds of throws to score a goal are possible. The Handball player is inspired to use his hands as a means of carrying out his ideas. The game is also faster than other ball games.

Aerobic Training:

Aerobic exercise refers to exercise that involves or improves oxygen consumption by the body. Aerobic means "with oxygen", and refers to the use of oxygen in the body's metabolic or energy-generating process. Many types of exercise are aerobic, and by definition are performed at moderate levels of intensity for extended periods of time. To obtain the best results, an aerobic exercise session involves a warming up period, followed by at least 20 minutes of moderate to intense exercise involving large muscle groups, and a cooling down period at the end.

Aerobic Dance:

Dance is an independent art form. It can exist without music, accompaniment, costume or scenery. Traditionally; however a major objective in dance education has been to teach children to relate movement effectively, to accompanying sounds and to music. Too often, this objective has been implemented for encouraging children to listen to a piece of music, a song or a poem and then to develop movement sequences that fit the accompaniment. Training has been a part of human language since ancient times. It devotes the process of preparation for some task. The preparation of a sportsman / women represents a multisided process of purposeful utility of the total complex of factor which helps in the development of the sportsman / woman and ensures a necessary level of his / her sports performance ability.

Methodology:

The purpose of the study was to determine the effect of varied frequency and duration of aerobic dancing on selected motor ability components and physiological variables of handball players. To achieve the purpose of the present study, Eighty Untrained healthy school boys students of Kendriya Vidyalaya Higher Secondary School, Kalpetta, Kerala India were selected as subjects at random and their ages ranged from 14 to 17 years. The subjects were divided into four equal groups of twenty each. Group-I acted as Experimental Group-I (Low Duration and Low Frequency Aerobic Training), Group-II acted as Experimental Group-II (Medium Duration and Medium Frequency Aerobic Training), Group-III acted as Experimental Group-III (High Duration and High Frequency Aerobic Training) Group-IV acted as and Control Group. The selection of variable can measure of speed in 50 Meters Run of seconds and Resting Pulse Rate using Stethoscope in Beats/Minute. The requirement of the experiment procedures, testing as well as exercise schedule was explained to the subjects so as to get full co-operation of the effort required on their part and prior to the administration of the study.

Dependent Variables:

- ✓ Speed
- ✓ Resting Pulse Rate

Independent Variables:

- ✓ Varied Frequency and Duration of Aerobic Dancing

Results:

Table 1: Significance of Mean Gains & Losses between Pre and Post Test Scores on Selected Variables of Low Duration and Low Frequency Aerobic Training Group

S.No	Variables	Pre-Test Mean	Post-Test Mean	Mean Difference	Std. Dev (±)	σ DM	't' Ratio
1	Speed	7.56	7.14	0.41	0.14	0.03	12.97*
2	Resting Pulse Rate	71.85	69.55	2.30	1.49	0.33	6.90*

* Significant at 0.05 level

An examination of Table-I indicates that the obtained 't' ratio were 12.97and 6.90 for speed, and Resting pulse rate.

Table 2: Significance of Mean Gains & Losses between Pre and Post Test Scores on Selected Variables of Medium Duration and Medium Frequency Aerobic Training Group

S.No	Variables	Pre-Test Mean	Post-Test Mean	Mean Difference	Std. Dev (±)	σ DM	't' Ratio
1	Speed	7.54	7.16	0.38	0.12	0.02	14.36*
2	Resting Pulse Rate	72.65	70.00	2.65	2.30	0.51	5.15*

* Significant at 0.05 level

An examination of Table-II indicates that the obtained 't' ratios were 14.36 and 5.15 for speed and Resting pulse rate.

Table 3: Significance of Mean Gains & Losses between Pre and Post Test Scores on Selected variables of High duration and high frequency Aerobic training group

S.No	Variables	Pre-Test Mean	Post-Test Mean	Mean Difference	Std. Dev (±)	σ DM	't' Ratio
1	Speed	7.52	7.01	0.51	0.12	0.02	18.35*
2	Resting Pulse Rate	72.30	68.30	4.00	1.02	0.22	17.43*

* Significant at 0.05 level

An examination of Table-III indicates that the obtained 't' ratio were 18.35, and 17.43 for Speed and Resting pulse rate.

Table 4: Significance of Mean Gains & Losses between Pre and Post Test Scores on Selected Variables of Control Group

S.No	Variables	Pre-Test Mean	Post-Test Mean	Mean Difference	Std. Dev (±)	σ DM	't' Ratio
1	Speed	7.55	7.54	0.01	0.11	0.02	0.29
2	Resting Pulse Rate	71.90	71.50	0.40	1.09	0.24	1.63

* Significant at 0.05 level

An examination of table-IV indicates that the obtained 't' ratios were 0.29 and 1.63 for Resting pulse rate.

Computation of Analysis of Covariance:

The following tables illustrate the statistical results of the effect of varied frequency and duration of aerobic dances on selected motor ability components and physiological variables of handball players.

Table 5: Computation of Analysis of Covariance of Mean of Varied Frequency and Duration of Aerobic Dances and Control Groups on Speed

Significant at 0.05 level of confidence for the degree of freedom 3 and 76 and 3 and 75

	LDLFAT	MDMFATG	HDHFATG	CG	Source of Variance	Sum of Squares	df	Means Squares	F-ratio
Pre-Test Means	7.56	7.54	7.52	7.55	**BG**	0.01	3	0.005	0.10
					WG	3.54	76	0.04	
Post-Test Means	7.14	7.16	7.01	7.54	**BG**	3.13	3	1.04	37.67*
					WG	2.11	76	0.02	
Adjusted Post-Test Means	7.13	7.16	7.02	7.54	**BG**	3.05	3	1.01	106.41*
					WG	0.71	75	0.01	

Results of Speed:

An examination of Table - V indicated that the pre-test means of low duration and low frequency aerobic training, medium duration and medium frequency aerobic training, high duration and high frequency aerobic training and control groups were 7.36, 7.54, 7.52 and 7.55 respectively. The obtained F-ratio for the pre-test was 0.10 and the table F-ratio was 2.72. Hence the pre-test mean F-ratio was insignificant at 0.05 level of confidence for the degree of freedom 3 and 76.

The post-test means of the low duration and low frequency aerobic training, medium duration and medium frequency aerobic training, high duration and high frequency aerobic training and control groups were 7.14, 7.16, 7.01, and 7.54 respectively. The obtained F-ratio for the post-test was 37.67 and the table F-ratio was 2.72. Hence the pre-test mean F-ratio was significant at 0.05 level of confidence for the degree of freedom 3 and 76.

The adjusted post-test means of the low duration and low frequency aerobic training, medium duration and medium frequency aerobic training, high duration and high frequency aerobic training and control groups were 7.13, 7.16, 7.02 and 7.54 respectively. The obtained F-ratio for the adjusted post-test means was 106.41 and the table F-ratio was 2.72. Hence the adjusted post-test mean F-ratio was significant at 0.05 level of confidence for the degree of freedom 3 and 75.

The adjusted post-test mean values of low duration and low frequency aerobic training, medium duration and medium frequency aerobic training, high duration and high frequency aerobic training and control groups, on speed are graphically represented in the figure - I.

Figure 1: Bar Diagram Showing the Varied Frequency and Duration of Aerobic Training and Control Groups on Speed

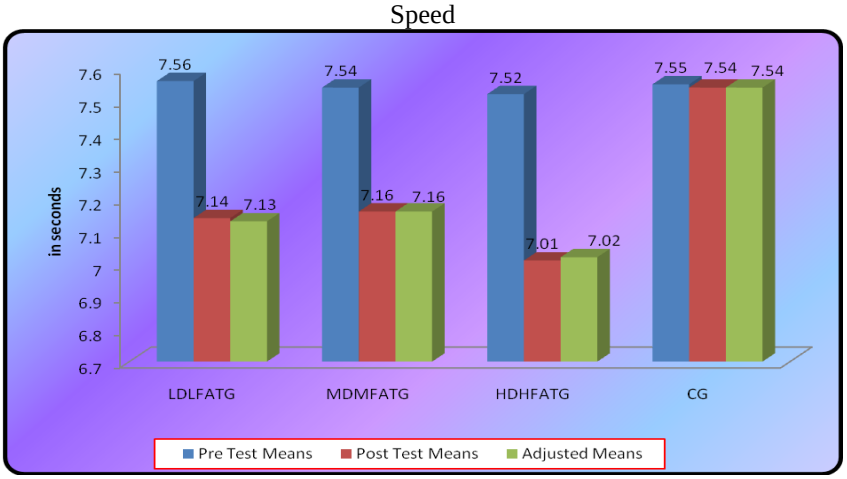

Table 4: The Scheffe's Test for the Differences between the Adjusted Post Test Means on Speed

Adjusted Post-Test Means				Mean Difference	Confidence Interval
LDLFATG	MDMFATG	HDHFATG	CG		
7.13	7.16	---	---	0.03	0.09
7.13	---	7.02	---	0.11*	
7.13	---	---	7.54	0.41*	
---	7.16	7.02	---	0.14*	
---	7.16	---	7.54	0.38*	
---	---	7.02	7.54	0.52*	

* Significant at 0.05 level of confidence

Table 4 shows that the mean difference between LDLFATG and HDHFATG, LDLFATG and control group, MDMFATG and HDHFATG, MDMFATG and control group, HDHFATG and control group were 0.11, 0.41, 0.14, 0.38 and 0.52 respectively on speed are greater than the confidence interval value 0.09, which shows significant difference at 0.05 level of confidence.

The mean difference between LDLFATG and MDMFATG groups were 0.03 on speed are lesser than the confidence interval value 0.09, which shows insignificant difference at 0.05 level of confidence.

Table 7: Computation of Analysis of Covariance of Mean of Varied Frequency and Duration of Aerobic Dances and Control Groups on Resting Pulse Rate

	LDLFATG	MDMFATG	HDHFATG	CG	Source of Variance	Sum of Squares	df	Means Squares	F-ratio
Pre-Test Means	71.85	72.65	72.30	71.90	**BG**	8.45	3	2.81	1.39
					WG	153.10	76	2.01	
Post-Test Means	69.55	70.00	68.30	71.50	**BG**	104.73	3	34.91	24.08*
					WG	110.15	76	1.44	
Adjusted Post-Test Means	69.63	69.87	68.26	71.57	**BG**	109.29	3	36.43	27.24*
					WG	100.29	75	1.33	

Significant at 0.05 level of confidence for the degree of freedom 3 and 76 and 3 and 75

Results of Resting Pulse Rate:

An examination of table - 7 indicated that the pre-test means of low duration and low frequency aerobic training, medium duration and medium frequency aerobic training, high duration and high frequency aerobic training and control groups were 71.85, 72.65, 72.30 and 71.90 respectively. The obtained F-ratio for the pre-test was 1.39 and the table F-ratio was 2.72. Hence the pre-test mean F-ratio was insignificant at 0.05 level of confidence for the degree of freedom 3 and 76. The post-test means of the low duration and low frequency aerobic training, medium duration and medium frequency aerobic training, high duration and high frequency aerobic training and control groups were 69.55, 70.00, 68.30 and 71.50 respectively. The obtained F-ratio for the post-test was 24.08 and the table F-ratio was 2.72. Hence the pre-test mean F-ratio was significant at 0.05 level of confidence for the degree of freedom 3 and 76. The adjusted post-test means of the low duration and low frequency aerobic training, medium duration and medium frequency aerobic training, high duration and high frequency aerobic training and control groups were 69.63, 69.87, 68.26 and 71.57 respectively. The obtained F-ratio for the adjusted post-test means was 27.24 and the table F-ratio was 2.72. Hence the adjusted post-test mean F-ratio was significant at 0.05 level of confidence for the degree of freedom 3 and 75. The adjusted post-test mean values of low duration and low frequency aerobic training, medium duration and medium frequency aerobic training, high duration and high frequency aerobic training and control groups, on resting pulse rate are graphically represented in the figure 2.

Figure 2: Bar Diagram Showing the Varied Frequency and Duration of Aerobic Training and Control Groups on Resting Pulse Rate

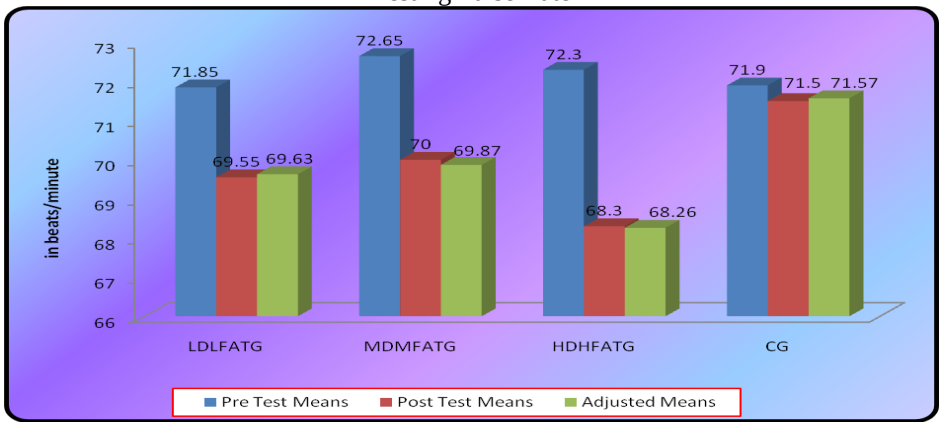

Table 8: The Scheffe's Test for the Differences between the Adjusted Post Test Means on Resting Pulse Rate

Adjusted Post-Test Means				Mean Difference	Confidence Interval
LDLFATG	MDMFATG	HDHFATG	CG		
69.63	68.87	---	---	0.24	1.04
69.63	---	68.26	---	1.37*	
69.63	---	---	71.57	1.94*	
---	68.87	68.26	---	1.61*	
---	68.87	---	71.57	1.70*	
---	---	68.26	71.57	3.31*	

* Significant at 0.05 level of confidence

Table 8 shows that the mean difference between LDLFATG and HDHFATG, LDLFATG and control group, MDMFATG and HDHFATG, MDMFATG and control group, HDHFATG and control group were 1.37, 1.94, 1.61, 1.70 and 3.31 respectively on resting pulse rate are greater than the confidence interval value 1.04, which shows significant difference at 0.05 level of confidence.

The mean difference between LDLFATG and MDMFATG groups were 0.24 on resting pulse rate are lesser than the confidence interval value 1.04, which shows insignificant difference at 0.05 level of confidence.

Conclusions:

From the analysis of the data, the following conclusions were drawn:

- ✓ In comparing the effect of LDLFATG, MDMFATG and HDHFATG groups on motor ability components and physiological variables, from the obtained f-ratio, it was observed that LDLFATG, MDMFATG and HDHFATG groups showed significant difference on increasing speed and decreasing in resting pulse rate.
- ✓ In comparing the effect of HDHFATG with LDLFATG and MDMFATG group on motor ability components and physiological variables from the obtained f-ratio, it was observed that HDHFATG showed better performance on speed and resting pulse rate than the LDLFATG and MDMFATG groups.

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